What of the English Strike?

THE outstanding news of importance at the present writing is the general strike in Great Britain. Fraught with tremendous consequences that may flow from its continuance, it has thrown a temporary shadow over the entire commercial and industrial world.

The main factor of importance is the question of the duration of the strike. The potential harm that would grow out of a prolonged struggle would leave its baneful effects primarily on England, and be capable of a reduction to only monetary loss.

That the Constitutional Government in Great Britain will win the strike is a foregone conclusion. The issue, as we see it now, and as it appears to the great majority of the English people is whether England shall be ruled by a self-appointed labor autocracy or by the constitutionally elected representatives of the voters of England. This question once fairly before the people of England, it will be decided in favor of a continuance of the Constitutional Government by the elected representatives of the voters.

The whole situation was precipitated by an economic question growing out of the matter of wages and compensation to the miners. It is a pity that question should not have been segregated and isolated from politics and settled by itself. It was as silly to open the door of all industrialism in that country to the harmful effects of a general strike as it would be for a community, having discovered a case of smallpox in its midst, to throw their doors wide open and expose the entire populace to the contagion. Factional trade disputes should, in the future, suffer an industrial quarantine, and come under the observation and treatment of specialists until a settlement is effected, and the harm of contagion to the body of commerce and trade in the world at large be avoided.

The shadow that is thrown across the commercial world by this general strike is temporary; it cannot endure long, for it is too vast in potential harm to the nation engaged and the world at large to last. Its settlement will mark a milestone in progress toward a better civilization and more stabilized commercial and industrial conditions since the war.

Trade and industry in the United States will only be slightly affected. Should England be compelled to keep its industrial processes closed for any length of time, its customers and the balance of the world will have to come to the United States for the commodities that England formerly supplied them. What would be England's and Europe's loss would be America's gain. But America does not need it, for its industrial and commercial conditions are prosperous and sound without it.

We feel that we voice the hope of every right-minded American business man, that England may forthwith settle this difficulty, speedily and permanently, and turn again to the building-up processes which make for a safe and sane civilization.

Correct Lubrication is Economy

REPLACEMENT and repair expense are among the heavy items in the cost of running any industrial plant. Nothing, of course, can prevent machinery from wearing out eventually. But if the life of an expensive machine can be lengthened by a year, or even by a few months, it means a great saving.

Correct lubrication will lengthen the life of any piece of machinery. But correct lubrication means more than merely filling the oil cups at regular intervals and making sure that the oil reaches the bearings.

The grade of the oil, and its quality, are just as important factors as the quantity.

Because of the several demands made upon it, the oil or grease must be of a quality to stand up under the bearing pressures, running speed and degree of heat to which it is subjected.

When high quality lubricants are used, in the grades suited to the requirements of the bearings, they will reduce depreciation cost and repair expense.

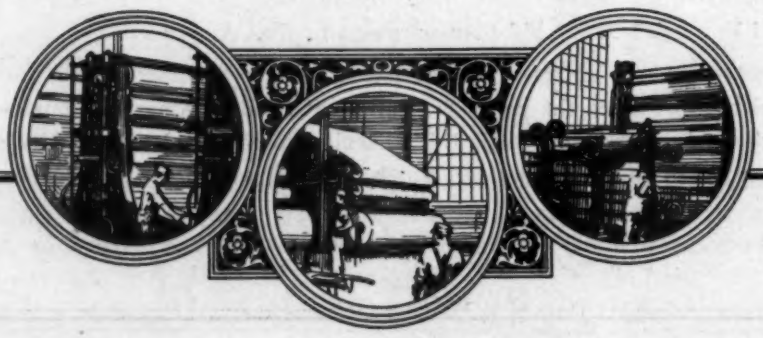
Standard Oils and Greases

are lubricants of the highest quality, and are made in many grades to suit exactly the requirements of all machinery used in the industrial world.

The lubrication engineers of the Standard Oil Company (Indiana) make surveys of industrial plants, without charge, and recommend the correct grades of lubricants for each piece of machinery.

STANDARD OIL COMPANY
(INDIANA)

General Offices: **910 S. Michigan Ave., Chicago, Ill.**



Observations of a Traveler

I HAD heard much of a new 2-machine newsprint mill which had been started as a separate enterprise by the Wayagamack Pulp & Paper Company at its kraft mills in Three Rivers last December, this newsprint department being operated as Wayagamack News, Ltd. For years past the parent company has been known as the largest producer of sulphate pulp in North America, with a daily output of 300 tons, not to mention 150 tons of kraft wrappers and printing papers.

Wayagamack's Newsprint Mill

The newsprint plant occupies a site running parallel with the kraft mill and the machines had been running a month at the time of my visit. The machinery and equipment of the plant are of British make throughout, as when it was decided to organize the Wayagamack News, Ltd., a loan of £425,000 ($2,125,000) was obtained from the British government conditional on the money being spent in buying machinery and material in Great Britain. The loan is guaranteed by the Wayagamack Pulp & Paper Company, Ltd., which has undertaken to operate Wayagamack News for a period of fifteen years. The steelwork for the buildings, including windows and skylights, were bought in England, as well as the paper machines, grinding machinery, boilers and motors, but the erection and construction work were carried out by the Dominion Bridge Company, Ltd., and the Foundation Company of Canada, Ltd.

A groundwood mill had to be constructed and equipped to provide stock, and this forms one of the new buildings. Four pairs of magazine grinders are operated and there is provision for two more pairs, which will bring the total to twelve single grinders. The grinders are actuated by four directly connected 2,600 h. p. motors, operating at 2,200 volts. The current is delivered by the Shawinigan Water & Power Company at 60,000 volts and is stepped down to 2,200 and 1,200 volts, the lower voltage being used for starting the grinders. The groundwood flows through a common channel to the screened stock tank after passing through bull screens; it is then treated in centrifugals and deckered before being pumped to the groundwood storage tank in the paper mill.

In no other paper machine room visited have I seen a more orderly and competent arrangement for the mixing and metering of stock as at Wayagamack. Back of the screens, arranged against the wall as you look down the passageway between the two machines from the dry end, is a Trimbey Mixing and Measuring apparatus, from which the stock passes to a Jordan engine and then to the machine stuff box consisting of a large cast-iron cylinder, with inlet, outlet and overflow pipes, but no gate. From the stuff box the stock is led through a pipe to a mixing pump; a bend in this pipe admits white water from the save-all tray which thins the mixed stock to the proper dilution for the screens. All white water not used for diluting the mixed pulps is run over an inclined wire save-all under the wet end of the machine and the reclaimed fiber pumped to the groundwood storage tank.

The paper machines are Walmsley products, driven by the improved General Electric drive as built by the British Thomson-Houston Company. The wire face is 164 inches with a length of 85 feet. The machine is equipped with a Pope reel and the Pope air appliances, in addition to a Sheehan rope carrier on the dryers. There are forty dryers of 72 in. diameter carrying four dryer felts. An electric traveling crane is used to make changes in rolls or move heavy equipment, being designed to travel up and down the length of the machine room over the flat hoods of the dryer part. The machines are designed for a daily production of 100 tons each; at present the combined output is about 140 tons.

I was interested in the facilities provided for the treatment of accident cases and at my request was introduced to Dr. McLaren, resident physician, who very courteously showed me over the dispensary and hospital where workers in any department of the pulp and paper mills can receive medical and surgical care when needed. Dr. McLaren is assisted by a trained nurse who attends to minor injuries. An average of twenty cases are treated daily and provision is made for handling more serious accidents, an operating table and hospital ward with cot being part of the equipment, which also includes a complete sterilizing outfit and a set of surgical instruments designed for any emergency. These and other things seen in a tour of the plant and grounds of the Wayagamack Pulp & Paper Company were evidences if any were needed, that the welfare and comfort of workers have been carefully studied and all facilities provided.

St. Lawrence's Novel Pulp Mill Design

The next place to be visited in Three Rivers was the plant of the St. Lawrence Paper Mills, Ltd., where I was told a novel layout of a sulphite mill could be seen. Within a few weeks of my visit, groundwood and newsprint had been the sole products of this mill, but now a Jenssen sulphite tower and other signs indicated the manufacture of sulphite pulp and it was learned that a surplus supply was being disposed of to Wayagamack News.

The novelty in construction of the sulphite mill will be understood when it is known that the burners are placed on the charging floor of the digester house on top of the building instead of on the basement floor as is customary. The combustion chambers are

Permanent Clearance

Cut-away view of Allis-Chalmers Motor equipped with Timken Tapered Roller Bearings

Shaft bearings cease to be the critical factor of motor service where Timken Tapered Roller Bearings are used.

It is not only that Timken Bearings on the shaft eliminate the wear of excess friction in the old, soft, rubbing bearings. Timkens also introduce the inherently higher load capacity of Timken Taper, Timken-made steel, and Timken positive roll alignment.

Radial, thrust and shock loads alike are scientifically absorbed, with rolling motion, on hardened and ground steel surfaces, in more compact mountings, which need inspection or lubrication a very few times yearly, at the very most. The lubricant is under the load when the motor starts, and the starting load is lighter besides.

All the chief old factors of bearing wear, therefore, are cancelled in Timken-equipped motors. The gap is permanent.

So greatly improving motors mechanically, electrically and economically, Timken Bearings also influence first cost favorably, by simplifying design.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

also there, whereas the cooler, of the ordinary Jenssen pattern, is situated on the second floor. The testing laboratory is also on the second floor for the reason that there was no other place to accommodate it. The settling tanks, fan and pumps are built in the basement, a roomy underground extension of remarkable storage capacity, with large catacomb-like bins that stretch out below a spur railroad track on which cars of sulphur are brought up and dumped directly into the bins. In similar fashion, the limestone is unloaded at the foot of the tower elevator which is used for carrying sulphur and passengers as well as stone to the upper stories, a novelty in itself as Jenssen tower elevators have not heretofore been used for the transportation of anything but limestone.

By having the burners and combustion chamber on the charging floor contiguous to the testing laboratory the services of an acid maker are dispensed with, the cook making his own acid. The cooking is done according to the Decker system which does away with the use of a relief cooler, as well as saving approximately 100 lbs. of steam per ton of pulp. The digesters are connected in series, the relief from one digester being injected into the bottom of another that has been newly filled with chips and acid so that temperature and pressure are brought up gradually without the use of steam. After being relieved, the first digester is finished with steam in the usual way, and the process continued.

The groundwood mill of the St. Lawrence Paper Mills is equipped with eight Waterous machine grinders having a daily output of 140 tons, from which newsprint is made on two 158-in. Dominion Engineering Company Fourdriniers at the rate of 150 tons a day, when operating at full capacity.

The distance from Three Rivers to Grand' Mère is covered by train in a little over an hour and a half. Here is where the Laurentide Paper Company maintains a great hydroelectric power plant and a pulp and paper mill with a daily output of close to 400 tons of newsprint paper, some of which is made on what are reputed to be the world's fastest running paper machines. The thriving city of Grand' Mère, with its population of 8,000, is a conspicuous monument to the business ability and farsightedness of the Laurentide management which has always exerted a controlling influence in the affairs of the community.

Port Alfred's New Paper Mill

The Saguenay district of Canada which stretches in a northwesterly direction from Grand' Mère to Chicoutimi is a region of extra ordinary interest for pulp and paper manufacturers. One of the most recent developments is the Port Alfred Pulp and Paper Corporation's newsprint mill on the Saguenay river at Port Alfred, in connection with the sulphite pulp mill which has been operated by the company since 1918 and now has a productive capacity of 50,000 tons a year. Two additional digesters are planned, making seven in all, and the construction of ten continuous grinders and two newsprint paper machines is in progress. The bed plate for one of the machines, which is expected to be turning out paper this month, was being laid at the time the mill was visited last January and we have been since advised that two additional machines are to be provided which will give the plant when completed a rated annual production of 120,000 tons of newsprint paper. The second machine is expected to be turning out paper in August, the remaining machines being scheduled to start up in October and December respectively. The president of the Port Alfred Pulp and Paper Corporation is George M. McKee, who left the Algonquin Paper Corporation's plant at Ogdensburg, N. Y., some time ago to assume full direction of the Port Alfred plant.

Price Bros. Mill At Riverbend

On the Little Discharge, a few miles from Lake St. John, in the Saguenay district is the new Riverbend mill of Price Brothers & Co., the location of which is shown on the map of the Saguenay and Lake St. John district, reproduced on page 297 of this issue by courtesy of R. S. Kellogg, secretary of the News Print Service Bureau. This mill is only half an hour's walk from the great Duke-Price Power Company's plant on the Grand Discharge from which power will be obtained to operate the machines of both the Riverbend mill of Price Brothers & Co., and the Port Alfred mill of the Port Alfred Pulp and Paper Corporation. The Riverbend mill has a rated capacity of 200 tons of newsprint paper and there is opportunity for unlimited development, the plant being admirably situated as regards transportation facilities.

The mill at Riverbend is reached by a line of railroad which branches in a northwesterly direction from the Saguenay Junction station of the Canadian Northern R. R. At the time of our visit, this was the newest and most modern newsprint mill in Canada. The paper machines are of Walmsley make of 234-inch face, driven by Harland sectional drives, designed for speed up to 900 ft. a minute. Briner economizers form part of the equipment. The boiler plant is equipped with four Kaelin electric steam generators and the electric power, taken from the Grand Discharge plant of the Duke-Price Power Company some two miles away, is used for steam generation as well as mill operation. The boiler plant is a most modern affair as may be understood from the mention of electric steam generators, the only source of steam available, but a Ruths steam accumulator also forms one of the up-to-date features of this up-to-date mill. The resident manager and general superintendent of the Riverbend plant, to whom we are indebted for many courtesies, is H. Munro.

Six pairs of Voith caterpillar grinders, twelve mag-

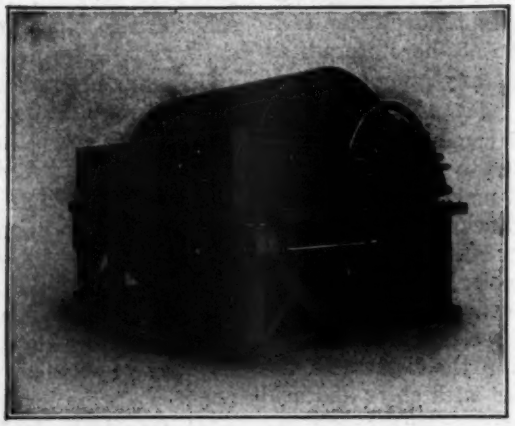
(Continued on page 252)

Let's Consider the Question of

THICKENING

You can do it with Wet Machines or
you can do it with

OLIVERS



Recently two 84"x36" diameter Wet Machines have been replaced by one 5' 5"x8' OLIVER for thickening Sulphite Stock before Bleaching.

Wet Machines occupied three times the space and cost more than the OLIVER.

The OLIVER saved 0.88 lb. more stock per 1000 gallons or 1600 lbs. per day on a 35 ton capacity.

Labor costs for OLIVER $3000 less per year and no felts required.

Saving on stock per year.....	**$12000**
Saving on labor per year.....	**3000**
Saving on felts per year.....	**1000**
	$16000

On this showing alone the OLIVER pays for itself in seven months.

Consider the Question

and take it up with the

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building

New York
1422 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

See page 390 in the 1925 Paper and Pulp Mill Catalogue

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

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Hydration of Cellulose in Papermaking

An Outline of Researches That Have Attracted Wide Interest

By JAMES STRACHAN, F. Inst. P., F. R. M. S.

Chief Chemist to The Donside Paper Company, Ltd., Aberdeen, Scotland

MY PAPER on the "Hydration of Cellulose in Papermaking," read before the Technical Section of the Papermakers' Association of Great Britain, at Manchester last November, has aroused a considerable amount of interest and criticism. It has been the subject of discussion at two subsequent meetings of the Technical Section in London, and I have received numerous inquiries concerning it from America and other countries. In response to these inquiries, and pending the publication of the paper with discussions in the Proceedings of the Technical Section, I propose to deal now, briefly, with the main points of my study of the subject.

In the first place, I would state that the physical theory of hydration presented in the paper is not based entirely on the experiments quoted, but is the result of many years' practical work in which both laboratory and mill experience were constantly checked against each other.

In the second place, I have not attempted to deal with the subject in detail, as this would have required a large volume instead of a paper. I have simply laid down what I consider to be the first principles of the subject, and quoted selected evidence from both laboratory and mill practice, sufficient to illustrate my thesis.

During the desiccation, or drying, of cellulose under various conditions, there is no evidence to show that cellulose forms a chemical hydrate in the sense of a compound of cellulose with water in definite molecular proportions, and having a definite vapor pressure at a constant temperature.

The vapor pressure curve is continuously variable, not only for adsorbed water, but also for water of imbibition, and in this respect, the case of cellulose is analogous to that of other elastic gels such as gelatin. Cellulose differs, however, from gelatin, in possessing an organic structure which varies to some extent in fibers from different sources. The cellulose mass comprising the fiber may thus be defined as a porous elastic gel having a regular structure.

In the beating operation, we have to consider the velocity of imbibition of water by such a gel, and as it is obviously impossible to illustrate this by means of experiments on an individual fiber, I have chosen a series of experiments conducted on blocks of vulcanized rag fiber, in which fiber structure had been very largely retained but interfiber space eliminated.

Velocity of Imbibition

These experiments show that: 1—The velocity of imbibition is represented by a logarithmic graph similar to that observed in the case of other elastic gels. 2—In the porous gel, the velocity of imbibition is increased by pressure, vacuum conditions and heat, and this increase is due to the removal, compression and solution of absorbed and included gases such as air, resulting in increase of specific surface. 3—Velocity of imbibition is directly proportional to the specific external surface of the mass, and to increase of surface due to swelling. 4—Velocity of imbibition in saturated or air-free specimens is increased by pressure and cold, but diminished by heat. 5—Velocity of imbibition is increased or retarded by various substances in dilute solution.

In the beating operation, many factors operate, but the main one is increase of specific surface. The increase of surface due to the cutting up of the fibers into short lengths is trifling compared to that caused by actual disintegration of fiber surface into fibrillæ. In the case of the latter, the velocity of imbibition is so high that we may regard it as taking place almost

instantly, as they are broken loose from the organized struction of the fiber. Hydration of the fiber during beating may thus be defined as the increment of water imbibed during disintegration and fibrillation of the cellulose.

This may be measured by weighing the water retained by the samples at a standard pressure and temperature. The difference between the water of imbibition in the unbeaten pulp, and that of the beaten pulp is the so called water of hydration. For this purpose, various methods of expelling the capillary water are being thoroughly tested out, but up to the present the best results have been obtained by the use of a miniature hydraulic press operating on about 5 gms. of pulp (air-dry) drained in a level layer about 6.5 cms. in diameter. The pulp is pressed on a 40-mesh wire, supported by a perforated steel grid. Comparative results may be obtained at a pressure of 25 lbs. per square inch, but the actual content of colloidal water as distinct from capillary water can only be worked out from graphs covering a range of pressures from 5 to 100 lbs. per square inch. The pressure plate of the ram is covered with thin sheet rubber to take up slight inequalities in the sample. It is essential, however, to have the sample in a layer of uniform thickness, and pressing must be done at a standard temperature. With this form of apparatus, it may be proved that the increment in imbibition due to fibrillation in beating of very wet stuff is approximately 100 per cent (or equal to the weight of the dry fiber), whereas normal wet beating is round about 40 to 50 per cent. The calculation is made on fiber, irrespective of mineral content, as mineral fillers do not show any measurable increase of water content during beating.

It should be noted that by this method of measuring the water retained by the fiber, we get an absolute assay of hydration, which is independent of the fiber length or dimensions. The Schopper-Riegler tester, on the other hand, measures drainage or rate of filtration, which is modified by the size of particles as well as their condition.

During the progress of beating, a range of samples (every half-hour) when pressed by my method and compared, show by visual inspection (difference of shade) and handle (difference of wetness), a graduated and very perceptible difference, which is rather an interesting proof of one method used by the practical beater-man in testing wetness, viz., squeezing a sample hard between his fingers, and observing its appearance and handle.

When the increment of water retained by such a series of samples is graphed against time, using a constant power load, we obtain a straight line over the major portion of the operation, proving that the hydration is not only proportional to increase of specific surface but also to horsepower-hours of beating.

While hydration of the fiber softens it, and tends to reduce drainage rate, it should be noted that wetness (slowness) or freeness (quickens) on the wire comprises other factors which tend to retard drainage.

The making of a sheet of paper on the wire should be regarded as a special problem in filtration, and in my opinion, the evolution of the wet-end of the paper machine is tending toward the replacement of the wire by a rotary filter.

Variations in the physical system of cellulose-water as affected by pressure and time continue at the presses and calenders of the machine.

Microscopical investigations of the minute structures of fibrous cellulose show that there is no change in the refractive index of the fibrillæ. The latter are in themselves highly translucent, and with intensive fibrillation, the resulting reduction in bulk and increase of transparency are caused by the breakdown of the porous symmetrical fiber-structure, followed by closer physical association of the fibrillæ during felting and drying. It is possible that in addition to fibrillation, we have also some internal breakdown of the organic structure in the fiber. The highest degree of skill in beating is displayed in the production of a paper in which the fibrillation is carried out to a maximum on the surface layers only of the fiber, thus retaining bulk and opacity with a high degree of strength.

The fibrillæ themselves I conceive to be formed from chains of cellulose molecules and their arrangement in the fiber is the result of growth along one or two axes. Without the third axis of growth, we cannot have a definite crystal form. Indeed, the study of the minute structure of cellulose seems to indicate that the peculiar physical properties of such gels may be fully accounted for by assuming molecular orientation and cohesion in one or two planes to form a network of threads or films.

The effect of very dilute solutions of acids, alkalis and salts on the velocity of imbibition shows that the presence of chemical residues in the stock, or the deliberate addition of such substances should be carefully controlled by hydrogen ion concentration tests.

My paper deals generally with pure normal fibrous cellulose, but in the application of my theory to the more or less impure forms of cellulose used in papermaking, we have to consider:

1—The variations in minute fiber structure in cellulose from various plants.

2—The presence of impurities in the cellulose, e.g., ligneous matter and oxycellulose.

3—The past history of the fiber, and changes brought about during its isolation.

Obviously a fiber with a fragile cell wall will fibrillate more quickly than one of more robust structure. Excessive ligneous matter, as present in cold-ground mechanical woodpulp, or oxycellulose, as in overbleached stock, will produce disintegration of the cellulose without much fibrillation. Woodpulp produced by the quick-cook sulphite process and overheated

during drying will also disintegrate quickly. Woodpulp produced by the Mitscherlich process is more resistant and produces long fibrillæ which do not disintegrate rapidly. During fibrillation, all papermaking forms of cellulose give rise to detached fragments of fibrillæ which tend to produce a slimy suspension. The slime production is favored by the presence of ligneous impurities in many cases, and if the latter is not excessive, may cause more rapid fibrillation, but such changes are not evidence of chemical hydration during beating. Any chemical changes that take place during beating are incidental and depend entirely on the past history of the cellulose, its condition as a result of the latter, and the increase of incipient chemical changes with increase of specific surface.

Refunds of Excess Taxes

Board of Tax Appeals Granted More Authority

By M. P. SNOW

Public Accountant and Tax Counselor

ALTHOUGH I have said something about refunds in previous stories, I mean to tell you a great deal more at this time because the months of May and June will be such important ones from the standpoint of getting back any excessive amounts which you may have paid to the Government in taxes.

People all over the country are wondering how the new revenue act affects their claims for refund.

One of the important changes made is the way your claims for the years 1920 and 1921 may be handled. Under the old 1924 tax law, you had to have your claims filed on or before March 15, 1926, or your claims for the years 1920 and 1921 would be barred.

A concession is granted you under the new 1926 tax law. The new act says that if you, on or before June 15, 1926, file a waiver for taxes due for the year 1920 or 1921, you have until April 1, 1927, in which to file a claim for refund or credit.

Then, the law goes a step further. It gives you until April 1, 1928, for filing claims for these two years, if the waiver you file on or before June 15, 1926, is extended—before it expires—by the filing of a new waiver or by extending the original waiver.

If you think you have paid excessive taxes for either or both of the years 1920 and 1921, file a waiver by all means. Of course, this gives Uncle Sam the right to make an additional tax assessment against you at any time within the period, but to the person who thinks he has money coming back to him for these years it will not seem very likely that additional amounts will be taken from him by the Government.

Authority of Board Increased

A most interesting thing about the new tax law is that it gives the Board of Tax Appeals a great deal more authority with respect to refunds than it used to have. The Board is not given complete jurisdiction over these claims but, if you appeal to the Board, it is authorized by Congress to determine the amount of any overpayment which you may have made. When the Board's decision becomes final, the amount is to be credited or refunded to you.

However, in order that this claim for refund or credit may be made, a claim must be filed within the statutory period for filing claims for refunds. Or, such a credit or refund is allowable if the petition was filed with the Board within four years after the tax was paid in the cases of taxes imposed under prior laws, or within three years after the tax was paid in the case of a tax imposed by the 1926 act.

From the way the law is worded here, it appears that if you appeal to the Board after four years or three years (according to what years are involved) from the time the tax was paid, the claims for refund should be filed with the Treasury within the four year or three year period in order to protect your right to receive a refund, in case the Board does decide you have overpaid your tax for the year in question. In other words, if you are going to appeal to the Board on June 15, 1926, and the three year or four year limitation period expires June 1, 1926, you should put in a claim for refund before June 1st, in order to protect yourself. Whenever you are doubtful about your rights in connection with claims for refund do not take a chance, file your claim for refund.

Of course, refunds for past years are the most important, but it is also a good thing to see just what the new law has done about refunds for the years beginning with 1925. The new tax law says that unless claims are filed within three years from the time the tax was paid, no refund of taxes imposed by the new act may be made.

With respect to previous years—that is, years before 1925—you have four years after the time the tax was paid in which to file claims.

The Value of Old Claims

But here is the most important thing which I am able to tell you in this entire article—something so important that you should very carefully preserve this information.

Even where your case may appear to be outlawed

under the provision just mentioned, your claim for refunds may still be good.

There are several things which have not been changed by the new tax law. These provisions are the very ones which operate, in many instances, to hold open cases which appeared to be irretrievably closed. Few people understand the full significance of the words "four years from the time the tax was **paid,**" which applies to the years previous to 1925. Too many taxpayers interpret this as meaning four years from the time the tax was due. Right here is the "catch."

You may pay a tax on the year 1917 in December, 1923. You have four years from the time the tax was paid—whether it be the tax you paid at the time you filed your return, or whether it is an additional amount, paid at a later date. Thus if you paid $5,000.00 additional tax on December 15, 1925, you have until December 15, 1927—four years from the time the tax was paid—in which to file your claim.

It is easy to see how many thousands of cases now supposed to be hopelessly outlawed are held open by these provisions of the tax law. It is fortunate that the new law has continued them.

It is no secret that taxpayers in this field paid their highest taxes to the Federal Government in the years 1917, 1918 and 1919. These high tax years are supposed to be closed and, in many cases, are forgotten. There are any number of taxpayers who think they have money refundable to them for these years, but they have decided to let the matter go because they think there is no chance for them to obtain payments from the Government of any excessive taxes collected.

Now, there is still another provision which works to hold open claims and make refunds possible as far back as 1917, 1918 and 1919. This part of the tax law is also the same in the 1926 act as in the 1924 law. In effect, it provides that if your case comes under this section of the law, the Statute of Limitations does not apply. You will get advantage of this provision if your invested capital is decreased by the Government, due to the fact that you failed to take adequate deductions in previous years, with the result that there has been an overpayment of your taxes in any previous year or years. In such a case as just described, the amount of overpayment must be credited or refunded. Now, the law says that the amounts so paid by you should be refunded, regardless of whether you file a claim. However, it is my counsel that you file a claim in any such instance. It is quite possible that Uncle Sam might not detect the fact that you have this refund coming to you. Again I say, "do not take a chance." File your claim and remember, where your invested capital has been received by the Government, with the results just mentioned, you are entitled to a refund notwithstanding the Statute of Limitations.

Now, there are a few cases where the Government has assessed and collected taxes even after the Statute of Limitations had run. The new law has a few things to say about this, also. Under this new act, taxes collected after the expiration of the Statute of Limitations may be recovered by the taxpayer.

And, even though you, as a taxpayer, appeal to the Board of Tax Appeals with respect to the tax for any year, this does not bar the right to a refund of taxes collected after the expiration of the Statutory period. However, if the question is ruled on by the Board as to whether the case really is outlawed, the Board's ruling is final.

Incidentally, this is a thing that works the other way round, also. If the Government pays you money after your right to receive the refund is barred by the Statute, the Government may recover this from you.

Quite a number of you who are reading this, filed "tentative" returns March 15 and will file your complete return May 15. To such of you as this story reached before May 15, I will remind you that if the amount you paid on March 15, on the basis of what you then estimated to be your correct tax, you now find was an overpayment, you may reduce your June installment (providing you are paying in installments) by the amount of the excess. Of course, if you have underpaid, you should raise your June payment accordingly.

Cellulose Wadding

SODA pulp is the kind that is generally used in the manufacture of cellulose wadding and an extra well bleached soda pulp by preference, but sulphite pulp can be used with good results.

In using sulphite pulp, it is necessary to take extra precautions to free it from the last traces of rosin. A very careful bleaching process with chlorine follows, and the bleached mass must be washed free from residues of chlorine and acid before being pumped to the beating engine where it is prepared for treatment in the wadding machine, which is a modified Yankee that takes up a thin layer of the moist, fleecy material. This is led under hot dryers, where the heat causes the moisture to evaporate so as to produce bubbles of steam between the thin cellulose sheet and the surface of the rolls, thus causing a partial rupture of the fabric and cell membrane, which increases the absorptive capacity of the tissue.

The dried cellulose wadding is scraped off the cylinder by a doctor which causes a more or less pronounced curling or creping of the fiber mass, forming a fleecy, elastic fabric possessed of great absorbent power. After being unrolled from the doctor, as many as six to twenty-four layers of the tissue are superimposed in order to make the sheets more tenacious and reduce the porosity of the mass. In this way, a more or less strong and porous layer of wadding is formed of a still high absorbing

capacity, which is then cut in rolls or square pieces of varying sizes.

On account of its softness and lightness, cellulose wadding is suitable for packing and decorative purposes in various industries, and as it can be manufactured in various colors and embossed, it is used especially by chinaware manufacturers and florists as packing and insulating material, serving to protect articles against extremes of heat or cold. Because of its freedom from taste and odor, it makes a good filtering medium and for this purpose it is marketed in the form of flakes.

Cellulose wadding is pure cellulose and has the properties of a short, staple, fat-free and bleached cotton. In the early stages of this industry, wood-pulp cotton or cellulose wadding was not well adapted for use in surgical dressings owing to its tendency to become fuzzy and fall to powder, a disadvantage which has been completely removed through improvements in methods of manufacture.

There is little or no cellulose wadding imported into the United States as the substance is classed as paper and a high tariff duty is exacted on shipments of the material.

Cold Bleaching at High Densities

By MAX E. BOEHM
Boehm & Son, Appleton, Wis.

UP UNTIL a year or so ago, when we would talk of high density bleaching, we considered a density of 12 or 14 per cent as about the limit, at least from the standpoint of commercial production, on account of the tremendous power consumption necessary with the systems then in use. Some engineers are still of the opinion today that 14 per cent represents the maximum figure, but I wish to disagree with any such opinions that may be advanced. I know by personal experience and by actually conducting bleaching plants on a commercial scale that it is possible to economically bleach pulp at a consistency as high as 30 per cent with less than 10 horsepower, but I do not necessarily advocate a density this high. I have, however, successfully operated bleaching plants at densities from 16 to 25 per cent and secured uniform production of a very strong and extremely white pulp.

There are today several mills equipped with a high density cold bleaching system that are bleaching sulwhite cold at the above consistencies, and while this system is relatively new, my connection and experience with this system permits me to advance the following information pertaining to high density cold bleaching.

Advantages of High Density Bleaching

There are a number of advantages to bleaching at a high density and under a slight pressure in a closed retort:

1—The process being more concentrated, less equipment is necessary, resulting in a smaller investment per ton bleached, and likewise a saving in floor space.

2—Less power per ton of stock bleached is required. The power consumed running as low as two horsepower per ton.

3—The bleach consumption is considerably lower on account of the high density, for as the old saying goes, "less water, less bleach."

4—A very effective saving in the consumption of chlorine and the prevention of escaping gases are important features both from the standpoint of economy and better mill conditions.

5—A higher grade of bleached pulp is produced, yielding a pulp that is stronger, whiter and free from dirt.

6—Probably the greatest advantage of all is the fact that this process makes **cold bleaching** possible at high densities.

Within the last few years, there have been several types of worm bleachers put on the market, all of them more or less of an improvement over the old low consistency bleachers, and all of them more or less successful in reducing the consumption of chlorine, time and power.

The writer, who has had many years of experience in pulp bleaching from the old low consistency type to the more modern worm bleachers, was fortunately present and helped to operate the first new improved Globe rotary bleaching engine installed at the Port Huron mill. The results obtained were more than satisfactory, it being proved absolutely that it was possible to bleach pulp in a closed retort under a slight pressure and to do the bleaching absolutely cold, that is, at room temperature in about one-half the time possible with other systems on the market. As in all new developments, improvements in design were in order and credit for the perfection of this new type bleaching engine should be given to the Biggs Boiler Works Company, of Akron, Ohio, for they realized the possibilities of bleaching in this way. The improvements made by this company have resulted in several installations and while this system thoroughly mixes the pulp, making high consistency bleaching possible, there is no detrimental effect created by hydration.

In bleaching systems where drastic agitation of the pulp is necessary, hydrolysis is a serious drawback.

In a special report[1] of TAPPI, issued privately, there is the following statement:

> "High density apparatus is the most economical as far as steam and bleach consumption is concerned. However, I would call attention to the excessive hydrolysis of the fibre which takes place in the present high density system (the author evidently means the worm type bleaching systems). This is due to the mechanical action of the circulation, the hydrolysis is noticeable even in the low density of a Belmer, but is far greater in the high density bleachers."

I want to call attention to this fact. Pulp bleached in a Globe type bleaching engine with the improved type mixing baffles is not being agitated. I wish to draw a line between agitation and mixing. Pulp in the process of being bleached needs no agitation. What it wants, however, is thorough mixing so that the bleach liquor and the fibre come in contact, and, naturally, the less agitation the pulp gets, the less hydrolysis of the stock.

Power Consumption of Various Systems

It has been my experience that the power consumed in bleaching a fairly hard bleachable pulp at a density of 6 per cent with the equipment usually used for this purpose, is a 35 horsepower motor for a four ton batch and the bleaching time is about four hours, giving a power consumption of 35 h. p. hours per ton. The power consumption of various types of high consistency worm or agitation type of bleachers up to 14 per cent is about 40 h. p. per four ton batch, the bleaching time of this type of equipment is three hours resulting in a power consumption of 26.24 h. p. hours per ton. In systems of this type, steam is used to heat the stock and often air is used and forced through the mass and these features very materially increase the power consumption stated above. On the other hand, the Globe high density cold bleaching equipment capable of operating at a density as high as 30 per cent and as low as 3 per cent, if it were practical to operate at such extremes, requires but 8 h. p. for a four ton batch and the bleaching time is reduced to one hour or even less on a quick cooked pulp with a power consumption of two h. p. hours per ton and no steam or air is required. The following table will show the relative power consumption of the three systems:

Old Type Equipment	New Type Density to 14 per cent	Globe Engines Densities 16 to 25 per cent
H. p. for 4 ton batch..35	35	8
Bleaching time....4 hrs.	3 hrs.	1 hr.
H. p. per ton.....35	26.24	2

[1]The Special Reports of TAPPI are the compilation of the responses to the Special Inquiries handled under the Service to Members Plan. This distribution of the Special Reports is confined to the Corporate Members and the individuals who contribute to the inquiries. The Association is not responsible as a body for the statements or opinions expressed in the Reports.

Power per ton (h. p.-hr.), including power used in steam and air for agitation, h. p.	70	52.48 h. p.	No steam or air 2 h. p.

Cold Bleaching

It has been proved beyond a question of doubt by experienced mill superintendents that cold bleaching produces a more serviceable grade of stock, but heretofore the time consumed for cold bleaching has made it impracticable from the standpoint of production, especially in some mills where the element of cost or time consumed has been disregarded. Bleaching under temperatures up to 110° Fahrenheit has usually been adopted as a satisfactory method, all superintendents realizing, however, that an excessive temperature was to be avoided and every precaution possible was taken to keep the temperature as low as possible or as low as the time schedule for the number of tons to be bleached would permit.

Pulp bleached hot contains more oxycellulose and naturally is of a weaker structure than cold bleached pulp. Furthermore, hot bleached pulp is very difficult to wash thoroughly, for due to excessive hydrolysis that has taken place, it is practically impossible to remove all of the bleach or the carbonates and chlorides left from the bleaching action. These in turn interfere with the color of the pulp and makes it difficult to secure that blue white color which is desired by the paper trade in general.

On the other hand, pulp bleached cold without undue agitation is easily washed, it is strong and assumes a very desirable color.

One of the oldest beater engineers, at point of service, who learned his trade in England and has had thirty years or more experience in the United States, at one time told the writer that if he could secure a cold bleached sulphite the same as he had had in the old country, he would make a sheet of paper that would be better in strength, formation and color than anything produced here. He finally was able to get his cold bleached pulp and is today making a sheet that all other paper makers are using as a standard.

There is a difference in the "feel" between a cold and hot bleached pulp. The former being firm and hard, not mushy, handles better in a beater, can be beaten soft without parchmentizing. If you will ask any experienced beater engineer, he will tell you that if you give him a good hard firm pulp he can beat it into any kind of finished paper stock, either for a hard or soft sheet. As the old saying goes—"The paper is made in the beater." Give your beater man a chance. If the paper is to be made in the beater, don't give him a pulp that has been more than half beaten before he gets it.

There are many sulphite men, bleach men and paper makers today that have an erroneous idea that forcing air through the pulp while in the process of

bleaching saves chlorine. The idea being that the oxygen in the air is helping to oxidize the lignen. The writer tried this in almost all of the old and new bleaching engines and found that about all he got was extra agitation and an actual increase of chlorine consumption and for that matter why not, for what you are really doing is blowing the free chlorine out into the air before it has a chance to do the work that it was put in for.

It is true that it is the oxygen that does the bleaching, but there is a vast difference between the oxygen in the air and the oxygen in the water that was put into the pulp with the chlorine. The oxygen which is liberated by the bleaching action is known as nascent oxygen, and it does the bleaching by oxidizing the lignen and coloring matter on the fibre. The oxygen in the air is not nascent, but is inert as far as bleaching is concerned and does not aid in the bleaching operation.

Another phase of this question arises when it is stated that air must be used to drive out carbon dioxide, which is formed by the bleaching action, the contention being that if the carbon dioxide remains in the mass it has a blanketing effect and retards bleaching. I feel that this idea is false and is in direct contradiction of certain chemical reactions that take place during bleaching. Bleaching liquor is a compound known as calcium hypochloride and has the formula $CaOCl_2$. When this compound is dissolved in water, a chemical reaction takes place as follows: The carbon dioxide reacts with the calcium hypochloride forming calcium carbonate and free chlorine, the free chlorine dissolves in the water forming hypochlorous acid, which in turn breaks down, forming hydrochloric acid and nascent oxygen, the nascent oxygen doing the bleaching.

$$CaOCl_2 + CO_2 = CaCo_3 + Cl_2$$
$$Cl_2 + H_2O = HClO + HCl$$
$$HClO = HCl + O \text{ (nascent)}$$

Therefore, carbon dioxide aids rather than hinders bleaching, and to secure the best results should be left in contact with the pulp. This condition is exactly what happens when bleaching in a Globe bleaching engine. The sphere being pressure tight, all the carbon dioxide remains in the mass and aids in the bleaching and this undoubtedly is one of the factors responsible for the rapid bleaching in this kind of equipment.

Conclusion

I again want to repeat that bleaching at high density with the proper equipment has these advantages:

1—Less power is consumed.

2—Faster bleaching is made possible.

3—The consumption of bleach is materially reduced.

4—Cold bleaching is made possible on account of lower time consumption and a much cleaner and stronger pulp, as well as pulp of a higher color is made possible over that secured in low density or hot bleaching methods.

5—Owing to the short time required for bleaching in the absence of excessive agitation the pulp is not over hydrated.

Some Incidents in Activities of Miss Long Distance

Wit and Skill Exerted for Business Men

"HE IS not registered there. They cannot locate him."

This was the cheerless information an Omaha telephone operator had to pass on to a citizen who was calling a man at a well known New York hotel. The man placing the call in Omaha was not exactly pleased and told the operator he was sure his man was there and had registered on Friday. "He writes a peculiar hand," he added, "and they often say he is not registered."

Armed with this tip, back went the Omaha operator over the wires to New York. Another search in the big city hotel. No success. Finally one of the supervisors in the Omaha long distance office decided she'd "see what she could do." She reached New York and the hotel clerk. She gave him the same old information.

All too soon the clerk reported, "He didn't register here Friday." "Oh, yes, he did," the operator replied. "Look for any one registered from Omaha on Friday."

The clerk gave her two names but neither was the person wanted. Discouraged, but not defeated, the long distance girl rang the hotel clerk again. "Say," he shouted, "I told you that man wasn't registered. If you can find him in this hotel you are a better man than I am."

"Pick out the worst written names on the Friday register and see if you can't make Zachary out of one of them." Once more the register was consulted, while the operator hoped against hope that her hunch would be rewarded. Soon the clerk grudgingly admitted that he had found a name, written in an odd scrawl, which might be Zachary. Suppressing her elation, she rang Zachary's room and, in the parlance of the famous mounted police, got her man.

This brief story, true in every detail, is characteristic of the ingenuity and persistence often employed by long distance telephone operators in completing a call. In the majority of cases, of course, the parties are more easily located. But there are many instances in which little information is available concerning the person desired, his address or where he might be located if not found where he is supposed to be.

Such a call, for example, was placed in New York to Saranac Lake, N. Y., for the Riverside Inn, St.

Regis or Berkley Hotel, the calling party asking for 'Gertrude" or "Alex." The operator at Saranac Lake requested Gertrude's last name. The New York caller did not know it. The only information he could give was that Gertrude had a brother named "Alex" and that she was so beautiful she could be picked out of a hundred Gertrudes. Also, if she had her car with her it was a Pierce.

Gertrude was not registered at any of the hotels. A girl answering her description, however, had been dining each day during the past week at the Berkley. The proprietor said that if she came in that day he would question her and see if she was Gertrude, the beautiful sister of Alex. Sure enough, she was located and the New York man was overjoyed.

Another instance. A Philadelphia operator received a report that the person she was calling in Reading, Pa., was not expected in that day and could not be found. She remembered that earlier in the day another call had been made for this same man. In this case the calling party had consented to talk with Mr. B., an authority on car wheels. The operator asked her present patron if he would talk with Mr. B. This he was glad to do, saying that he placed the call to obtain information about car wheels.

The license number of an automobile was the means by which a call was completed from Toledo to a telephone at a certain address in Detroit. The report came back that the man wanted could not be found at the address given. Asked for further information, the Toledo man stated that he and the person he was calling at Detroit had been in an automobile accident. The operator then asked if he could give the Detroit man's automobile license number, which he did. The operator called the police department at Detroit and the man's name and correct address were obtained. The call was then put through satisfactorily.

Last minute changes in business plans sometimes make it imperative to reach a person just as he is leaving a city by train. The Dash Company at Minneapolis placed a call for a man at Duluth. Several reports that he was out for a few minutes were received and finally, at 1:15 p. m., it was learned that he was leaving for Minneapolis over the Soo line on the 1:30 p. m. train. Calling the railroad station, the operator had the man paged. At 1:28 he was still missing. A courteous railroad official informed the operator that the train stopped at Superior for one-half hour.

The operator called the railroad station at Superior and left word for the man to call Duluth if he could be found on the train. He reported some time later from the Superior station and talked to Minneapolis.

While most long distance calls are serious in nature, there are some, of course, which are not without their humorous side. The business-like young lady at the switchboard admits that now and then she gets a smile from bits of conversation that come to her ears as she completes and supervises the calls under her care.

A guest at a St. Louis hotel made an urgent request that long distance follow up an important call he had placed for his wife. The lady finally answered and an attempt was made to start the conversation. The St. Louis operator quickly gathered, however, that the husband was in no condition to talk coherently and diplomatically put the wife off.

The operator then called the bell captain of the hotel and advised him that she was ready with an important long distance call for the guest in room so-and-so, but the guest didn't appear able to talk. Would the bell captain help to get him in condition to speak? Sure he would!

Soon the captain reported, "Ma'am! That man don't want nothin' to sober up on. The only thing he'll take is more licker!"

The Dead Mill

How often in the days of Spring
I've heard the nesting robins sing,
Where high the greening elmtops fling
Above our paper mill.

Our little town had but one street.
Here, arched, the gothic elms would meet,
Here vernal lilacs smelled so sweet,
Here was our paper mill.

A sloping road, a trim bridge rail,
A mill pond stretching up the vale,
A bleachy whiff upon the gale,
A mill, our paper mill.

A rusty roll, some bales of rags,
A freight car where the platform sags,
Some china clay in mouldy bags
Lay 'round our paper mill.

The dam, the rack, whose timbers creaked;
The shaft, whose bevel pinion squeaked
In chorus, while the Jordans shrieked,
Announced our paper mill.

Now silent are the humming gears,
The water spills o'er slimy weirs,
The warehouse tilts on slumping piers.
It's dead, our paper mill.

What tragic fate befell our mill?
Why rot and rust, why wheelpit still?—
We kept on speeding up until
It bust, our paper mill.

—T. Linsey Crossley.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

1,000 Deg. F. Steam

NOW we are informed of a new line of valves which they claim will withstand a temperature of 1,000 deg. F. and 600 lb. steam pressure. Heretofore we have been told that 750 deg. F. is the limit.

We are becoming accustomed to rapid progress these days, and paper mills are keeping abreast of large central stations very nicely. Larger boilers of the water tube type are being installed right along; they operate at much higher pressures than a few years ago; modern stokers are becoming commonplace; and so is pulverized coal. In some paper mills the steam pressures employed are higher than in central stations.

We are also informed of a new boiler plant in a paper mill in Canada where pulverized fuel will be used. Any coal may be burned, even Nova Scotia coal with its low-fusing ash. The pulverizing plant will be located near the wharf nearly a quarter of a mile from the boilers. Things that were considered obstacles a few years ago are obstacles no longer.

Why Use Water?

THE boiler explosion on the steamship Mackinac has been the cause of considerable talk about boiler inspection and hydrostatic and hammer tests. These things have all been very interesting to me as I have had a little to do with such things, especially hydrostatic tests.

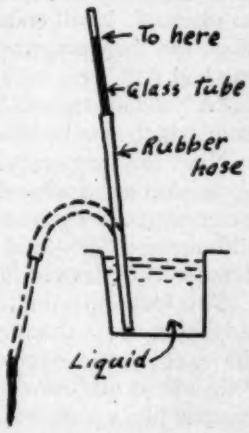
When I took a course on "Steam Boilers" in college, I was taught by the professor that the reason why cold hydrostatic tests are made in preference to tests under steaming conditions at actual boiler pressure is because cold hydrostatic tests are safe whereas hot tests are not safe. When a boiler explodes under steam pressure, things in general are usually pretty well messed up. Therefore, to more than duplicate actual conditions without the necessity of using hot water and steam, the pressure of cold water is brought up considerably higher than under normal operating conditions, and we have what might be called the "equivalent" of a test under working pressures and temperatures.

If this be true (and it sounded plausible to me at the time), why not duplicate actual working pressures and temperatures so long as it can be done? I believe it can be done by using a fluid other than water —a fluid that will not form gas or vapor as readily as does water—a fluid that remains fluid under high temperatures.

A number of times I have asked this question: "Why don't boiler manufacturers keep a supply of oil or other fluid on hand with which boilers could be filled and which could be safely heated to operating temperatures?" The operating pressure could then be created by means of a pump and it would be a simple matter to keep the temperature up where it belongs without any danger whatsoever. Even if the seams should part there would be no "explosion" because there would be no gas. Why is it not done? I have asked this question a number of times but have never received a satisfactory answer. Isn't it practicable?

A Siphoning Kink

EVER get any undesirable water or other liquid into your mouth while starting a small siphon? I have, and the "taste" has lingered with me for some time. Heretofore, the starting of a siphon has been the part that I didn't enjoy. Now I enjoy even that by making the simple addition of a glass tube as shown in the accompanying sketch.



By using a glass tube, you are enabled to "see" the liquid as it comes up. You can stop the liquid wherever you wish, before it reaches the mouth, as for example, at the point marked "To here" in the sketch. Then pinch the tube with your fingers to prevent back flow, place your finger over the end of the glass tube to hold the vacuum, lower the free end to the position shown dotted, and no trouble whatever will be experienced.

A glass tube, also, may be kept clean easily, so that, to create the initial vacuum, one is not liable to use the mouth with so great hesitancy.

This method is quicker, surer, and better than starting, via laying the hose in the liquid and stopping both ends, or filling the hose with a dipper, etc. This method always works the "first time."

Don't Test Safety Valves This Way

I HAVE before me a letter which shows that a user of a pressure vessel provided with a safety valve tested that valve by raising the pressure within the vessel itself to the point where the pointer of the pressure gauge came up to the needle. This probably brought the pressure up to 300 lb. per sq. in., whereas the vessel was not supposed to be operated at a pressure greater than 175 lb. per square inch.

The safety valve "stuck," you see, and the operator (who is not an engineer) could not see a better way in which to test out the safety valve than to increase

the pressure until the valve would "work." The manufacturer of the pressure vessel wrote to the operator as follows:—

"We wish further to advise you that it is inadvisable to test any safety valves in this manner and that serious consequences might arise from such procedure. We would advise that it is safer to report inaction of safeties when they reach the set pressure than to try to lift them in the manner employed by you, due to the severe combination of thermal and other stresses under these conditions."

Or, of course, it is much safer to do the lifting by hand or by means of a jimmy shortly after the "set pressure" is passed.

Superheating Exhaust Steam

THE superheating of exhaust steam is frequently advocated. It sounds good, and on the surface appears to be an economical method. However, there is a "nigger in the woodpile," which it might be well to discuss. I will endeavor to point out in a simple way the impracticability and uselessness of this method.

"A" is a steam coil located in a room, chamber, or body which is to be heated to a temperature of 250° F.

Now, the temperature of exhaust steam is 212° F., so an engineer approaches the owner and says: "Why not heat your exhaust steam from 212° to 260°—a difference of 48°—and you can easily obtain the 250° temperature desired in the chamber?"

This looks alluring to the owner, who does not know anything about the physical properties of steam, and he says to the engineer without further thought: "Go ahead and have the superheater put in. That sounds like a very good, logical, cheap way to do it."

The superheater is installed, the exhaust steam is passed through the superheater, and is superheated to the temperature of 250°. The arrangement works very nicely for a while until a certain temperature is reached in the chamber, but after that it is discovered that something is wrong. For some reason or other, the superheater doesn't work.

What is the matter? The explanation is this: Exhaust steam at atmospheric pressure will not condense unless the temperature surrounding it is less than 212° F. Just as soon as the temperature in the chamber is higher than 212° F., it becomes impossible for the steam to condense. Hence the steam coils simply fill up with steam, and the steam remains there as long as the temperature is higher than the temperature corresponding to atmospheric pressure, which is 212° F. Therefore it is virtually impossible to attain a higher temperature in the chamber than 212° F.

Ordinarily, without superheating, to attain a temperature of 260° in the steam coils, a gauge pressure of 21 lb. per sq. in. is necessary. Then as long as the temperature in the surrounding chamber is less than 260°, the steam within the coils will condense, and it can be trapped out easily. Hence with live steam no difficulty is experienced in maintaining a temperature of 260° F. in the chamber as long as the heating surface is efficient.

Where the superheated steam can be kept in motion and passed through the steam coils, the exhaust from the coils or from the chamber being used for heating or other purposes, it may be profitable to attach superheaters, but this is a point that should be looked into carefully before any steps are taken, since it can be proved that in many instances the use of a superheater is simply superfluous equipment that should not be used at all. It does not produce any gain in the steam economy, but rather adds a burden in first cost.

Rather than superheat the exhaust steam where it is primarily a problem of attaining a certain high temperature, it is frequently more economical to simply apply a naked flame or to apply high pressure steam directly to the heating surface of the chamber.

Cheap Coal Is Most Expensive

IN A recent discussion before the American Society of Mechnical Engineers, a prominent engineer cited an example where the cheapest coal was the most expensive. He stated that many kinds of anthracite and bituminous coal have been tested in his plant. In the tests it was found that with bituminous coal the efficiency was 85 per cent, whereas with anthracite it was somewhere between 75 and 80 per cent. It was necessary to pulverize the anthracite very fine because of the difficulty in igniting and burning it. He also stated that in the construction of a certain plant the brick work alone cost as much as the boiler, because the boiler was set 35 feet in the air. The anthracite would not operate the boilers at low capacity because the burners insisted on going out. However, they found that they can burn any grade of anthracite, provided they mix it with 30 per cent of bituminous.

Ball and Roller Bearing Advantages

AN IMPORTANT advantage claimed for ball and roller bearings is that practically no clearance need be allowed between the balls and the races, whereas in plain bearings there must be sufficient space for an oil film to form while operating. Hence, where spacing distances must be highly accurate, as in expensively machined gear trains, ball and roller bearings will maintain accuracy better and longer than will plain bearings.

The above advantage is of greater importance, very often, than the advantage of easier starting and lower consumption of power. Unless center distances are correct, vibration and rapid wear are liable to result.

A very good and practical demonstration of the superiority of roller and ball bearings over plain bearings comes in a news item from Czechoslovakia.

Some railroad cars were equipped with roller and ball bearings and it was determined that a locomotive could handle 39 cars equipped with ball bearings as compared with 30 cars using standard bearings. In other words, with ball bearings the number of cars were increased 30 per cent and the consumption of the fuel remained the same.

Roller bearings have also been found superior to ball bearings on railway cars in Sweden, so far as overheating is concerned. On long distance railroads, they experienced 50 overheated bearings as compared with 1.6 when ball bearings were used and there was no overheating whatever when roller bearings were used. As a result some of the express trains in Czechoslovakia have been equipped with roller bearings.

Belting Horizontal to Vertical Pulleys

QUARTER turn belts connecting horizontal with vertical shafts often give trouble. The belt on the vertical pulley is attracted by gravity, the same as anything else that has weight, and it does not stay up where it belongs. This difficulty can frequently be overcome by employing a vertical pulley having more than ordinary crown. It is not always necessary to use an idler pulley on drives of this sort. If possible it is best to avoid the use of idlers.

Another thing—use as light a belt as possible. There is a special mineral tanned belt on the market, for example, which is exceedingly tough and strong, and it is also lighter than other belts. On drives of this type it gives excellent service.

Where the distance between pulleys is so great that the weight of the belt causes it to leave the vertical pulley regardless of the crown, then it is best to use a guide pulley. Some belt men use two guide pulleys, but unless the distance between transmission pulleys is unusually great only one guide pulley should be employed. That guide pulley should be used to hold up the side of the belt "going onto the pulley" on the vertical shaft. The side of the belt leaving that pulley does not need holding up.

Where distances between pulleys are exceedingly great on quarter turn drives of this kind, the problem is sometimes effectively solved by shifting the pulley on the vertical shaft up or down as the case might be, until a position is located experimentally which holds the belt centrally at all times.

Burning Legnite Under Boilers

EXPERIMENTS have been conducted in North Dakota on the burning of lignite coal under boilers. A 400-hp. Stirling boiler was employed and it was equipped with multiple retort underfeed stokers.

In their experiments they found that by using a coking bituminous coal and mixing one and one-half times as much lignite with it, steam could be generated more economically. In fact, 12 per cent was saved by so doing.

There has been a marked tendency in nearly all industries during recent years to make use of the lower grade and cheaper fuels. Low grade bituminous coal and cheap lignite are being looked upon more favorably than ever before. High grade bituminous coal is entirely too expensive.

One of the objections to low grade coal is that it is harder to burn. Greater skill is required in firing it. To overcome this, underfeed stokers have come into prominence and recently these low grade coals are being pulverized. Pulverization is a very effective solution and the writer is of the opinion that we will do a great deal of it in coming years.

Lignite coal is very high in moisture and for that reason after being thrown upon the grate it disintegrates quickly and has a tendency to clog. Hence large grate areas are necessary. It is obviously unwise to change over from the burning of high grade coal to lignite coal without first enlarging the grate surface and of course such a change involves considerable expense. Changing over to pulverized coal is also expensive.

Forced draft assists materially in increasing the capacity of lignite fired furnaces, but the principal objection to forced draft is that if the air pressure is too high it will blow the light lignite fuel off of the grate up into the flues.

Use of Lampen Ball Mill

THE Lampen ball mill, consisting of a single heavy bronze ball in a revolving casing, has proved more satisfactory for beating test samples of pulp than the more usual type of porcelain ball mill, according to Rudolf Sieber. In order to avoid "chattering," the mill should revolve at not more than 200 revs. per min. The single ball may require a longer time to produce the desired result than several balls, but the uniformity and comparative accuracy of the beating should be more certain. The beating result would appear to depend not so much on the force of the strokes as upon their number of frequency, and this is controlled by the single ball.

The substitution of metal for porcelain has proved very satisfactory. The sheet of paper is produced on a mould connected with a water suction pump and is pressed up, after couching in a copying press. Uniformity of treatment is essential. A drying arrangement is used consisting of a steam-heated horizontal cylinder with thermometers at inlet and outlet. The cylinder is provided with a felt which is attached to the cylinder at one end and weighted with an iron rod at the other end, so that weights may be applied to hold the sheet of paper stretched between the felt and the cylinder.

Foreman Training in Paper Industry

Part IV—State Foreman Training Programs

By J. K. NOVINS

Author of "A Training Program for the Factory Foreman," "Foreman Training in Practice," "Manual of Practical Training for the Railroad Foreman," etc.

Training Foremen Leaders in the South

FOR those plants in the paper industries located in the South, there are many opportunities for the training of foremen and foremen leaders with the aid of state educational organizations. For instance, in the state of North Carolina a series of conferences were arranged with foremen from the Champion Fibre Company at Canton, with the co-operation of the Department of Public Instruction. In this state, the foreman training work is in charge of Mr. George W. Coggin, Supervisor of Industrial Education. While his department co-operates with the Federal Board for Vocational Education in conducting such conferences, the state has thus far not undertaken the training of foremen conference leaders.

In other southern states, however, the training of foremen leaders has been developed to a high degree of efficiency. A good example is the state of Maryland, which we touched upon in a previous article, with special reference to the conference for plant executives held in the state recently. Dr. George S. Sanders, State Supervisor of Industrial Education, recently outlined to the writer the state's program for training prospective foremen leaders.

Training the Plant Executive

"We provide opportunities for the training of foremen group leaders," Dr. Sanders explained. "Some of those attending this conference are at present conducting classes in their plants very successfully. Local industries are informed of the possibilities in foremen training through the Chamber of Commerce, group meetings, circular letters and by personal visits."

The conference to which Dr. Sanders refers was held recently in Baltimore with a mixed group consisting of foremen, assistant foremen, superintendents, personnel directors, etc., from twenty-five different companies.

"The conditions under which this conference was held," said Dr. Sanders, "were most unfavorable and quite a number dropped out. The conference method, I do not believe, can be used successfully with such a group and my experience with this group has proven that such is the case. Those, however, who continued until the last meeting, were enthusiastic and said that they had gained ideas which were of inestimable value to them. This conference has opened up paths by which I can work back in each industry represented and probably start some interesting and very much worthwhile programs.

"Our plan is to hold a conference on improving foremanship with a group of 15 to 20 foremen from one company. During this conference such subjects as pertain to human relations in industry are discussed, troubles and misunderstandings which the foremen are having are thrown out on the table and aired. The resulting discussions invariably clear up the situations and make the foremen feel better and more able to deal with similar or related problems in the future. The length of this conference is from twelve to sixteen meetings of from two to four hours' duration.

"During the course of these meetings, conferences are held with the management in which some of their troubles in getting certain reactions from the foremen are taken up and discussed. The value of foreman training is also gone into and the management is shown the hundred and one different things that they can take up with their minor executives which will be very worthwhile. It is also made plain to them that during these twelve meetings, it is only possible for us to scratch the surface of the program which can be put over and that if they want to have the interest and increased effort continued which has been aroused by these meetings, they can do so by arranging for a permanent program which can be conducted by holding meetings once or twice a month. Different plans are then proposed and discussed for future meetings together with topics which can be taken up with the foremen. These training conferences are held sometimes on company time, sometimes on the men's time and sometimes half and half. They sometimes are held weekly, semi-weekly and daily, depending upon local conditions in the plant."

Serving Tennessee Industries

In Tennessee, the Department of Industrial Education of the University of Tennessee has during the past three years been conducting foremen conferences in various plants, with the ultimate purpose of training executives to carry on such training in their own plants. These conferences have been led by Mr. James Arenston, State Supervisor of Industrial Education at Nashville and by Professor H. H. Coxen, Professor of Industrial Education at the University. The groups have been composed either of foremen from a particular plant, or from a number of plants

in one industry, or from several allied industries. At Kingsport, recently, a number of foremen from various local industries were led by Mr. Arthur M. Miller, Chief Engineer of the Tennessee Eastman Corporation. Among those attending the conference were foremen from the Mead Fibre Company of Kingsport. During the first week, the conferences were conducted by Professor H. H. Coxen of the University for four hours each afternoon from 2:00 until 6:00.

"During this week," Mr. Miller said, "men were, of course, excused from their regular plant work but in each case they were paid by their respective companies for the time put in on this class work. After the first week the class was continued in evening session. Classes were held twice a week from 7:00 to 9:00 for fourteen weeks. These conferences were conducted by myself.

"The class was originally organized with approximately sixteen men because it did not seem advisable to try to handle a larger class. The representation from each plant participating, therefore, was not large. Throughout the course the attendance was fairly large and the men seemed to be interested in the class.

"The work comprised a study of safety and accident prevention, interest in job, co-operation with the company, leadership, management and supervision, and a detailed analysis of the proper manner in which to handle various jobs; also a study of the proper method of teaching men the correct way to do their work."

Training the Kentucky Foreman

In Kentucky, foreman training is rapidly being promoted by the Department of Education, under the supervision of James T. Ryan, State Supervisor of Trades and Industrial Education.

"We have carried on foremen conferences in Louisville and other cities of the state," he said recently. "We make arrangements for holding these conferences with the management. No special effort is made to sell conferences to either management or foremen. The matter is merely presented to them, and it being a free service they are welcome to accept or reject as they see fit. We have run but one meeting for the training of foremen group leaders, and as far as I know none of these people have carried on the work. There are no facilities in the state for carrying on foremen training outside of the plant, except through the State Board for Vocational Education."

This state conducts four types of training service: Foreman training, part-time school, evening school and day-trade service. The foreman training service it regards of prime importance.

"Any industrial plant in Kentucky may obtain the services of a conference leader by applying to the State Supervisor of Trades and Industrial Education," the Department recently announced.

"The foreman is the connecting link between the management and the working force," the announcement says further. "The qualifications set up for a trained worker would not meet the necessary requirements for good foremanship. So many factors enter into successful foremanship in a modern industrial plant that it is almost impossible for a man to be promoted from the working force to the position of foreman without his receiving some special training to fit him for his new work.

"Our foreman training service can render valuable assistance in the training of foremen, by conducting foreman training conferences in industrial plants.

"Under this plan foremen or prospective foremen are brought together in groups of from 10 to 15 under a trained conference leader. Plant experience is used as a basis for developing the work. The aim of the conference leader is to get the foremen to discuss their problems, and from this discussion to develop the qualifications necessary for successful foremanship. The pooling of experiences is made possible and special abilities and talents may be traded between the foremen. The foreman's responsibilities as to handling of materials, instruction of workers, safety precautions, and loyalty to company are all developed. The conference leader does not lecture the group, but cites plant cases and then the ways of dealing with them are suggested, criticized and tested."

City Serves Its Industries

In Virginia, foreman training is promoted from two sources, by the state and by the city of Norfolk. In the state at large, it is under the supervision of Mr. Raymond V. Long, Supervisor of Industrial Education for the State Board of Education. Mr. Long has conducted a number of foremen conferences in Virginia industries with gratifying results. He co-operates with the Federal Board of Vocational Education, and makes use of the material and methods developed by that agency.

In Norfolk, the work is carried on by Mr. T. G. Rydingsvard, Director of the Department of Vocational Education of the Norfolk Public Schools, as a definite local educational function. Mr. Rydingsvard has conducted conferences with foremen from local plants along the methods used by the state educational officials.

"As far as I know," Mr. Rydingsvard added, "we have made a somewhat radical departure from the methods of conducting these conferences in that the conference leader has visited each shop twice a week in order to ascertain on the ground whether or not the points discussed were actually used. These visits have also given the leader an opportunity to bring real live shop problems into his discussions, and I may add that each one of the four authorized dealers whose foremen participated in the conferences have definitely arranged to carry on monthly meetings within the plants."

In Texas, a city educational program was developed in Fort Worth under the direction of the Forth Worth Public Schools in co-operation with the Texas State Board for Vocational Education. As far back as February, 1921, the state department organized a teacher training class at Fort Worth, to train plant executives to organize training programs in their plants. Executives from all trades and industries were invited to participate.

In addition, considerable foreman training work, especially the training of foremen leaders, has been accomplished by the University of Texas, and the Agricultural and Mechanical College of Texas.

In West Virginia, the state does not promote foreman training, except for the organization of one class in Wheeling for industries there. West Virginia University has developed a course for foremen, but this course would not apply to the paper industry.

In Mississippi, the foreman training work is conducted through Mr. M. D. Broadfoot, Supervisor of Trades and Industrial Education.

"Through the Trade and Industrial Division," he said, "we provide foreman training for two purposes. First, we expect that the foreman taking his training will be fitted for group leaders. Second, we draw our trade teachers from the groups having had the foreman training course. We are just entering this field."

Alabama follows the methods promoted by the Federal Board for Vocational Education. Mr. Ben E. Harris, Supervisor of Industrial Education, encourages local industries to inaugurate foreman training programs in their plants, and helps them prepare plant executives for this work.

New Mexico provides for the training of foremen group leaders and instructors, but makes no recommendations for courses of study by foremen groups in individual plants.

"How are local industries encouraged to adopt foremen training in one form or another?" the writer asked Mr. D. W. Rockey, State Supervisor of Trades and Industrial Education.

"By correspondence and personal visits," he replied. "Foremanship conference is a means to other vocational work with the actual worker rather than a continued educational program for the foremen."

In Georgia, a similar program has been developed. In other states in the South, the work has not been developed by the state, for the industries are few and far between. This is the situation in Florida, but Mr. L. S. Greene, State Supervisor of Industrial Education, assured the writer that within two years the state expects to start this work on a small scale.

The principal losses of sulphate in the manufacture of sulphate pulp, according to Sieber, are as flue dust (20 to 25 kg. per ton of pulp) and in the wash water from the pulp (60 to 70 kg. per ton). The total loss is at least 115 to 120 kg., and usually it is 140 to 170 kg., corresponding to 16 to 19 per cent.

The Trailer in Paper Transport

Trade Hasn't Yet Fully Recognized Certain Advantages in System

By S. K. HARGIS
Transportation Consultant

THE use of the trailer and semi-trailer in paper mill and stock house transport in the United States cannot be said to be as general as in many other of the heavy haulage industries. There is apparently no good reason for this; on the other hand, there are certain advantages in the trailer system for the paper trade in certain of its branches which should not be overlooked.

Some of the larger mills and stock houses have adopted partial trailer equipment with success but their fleets are not generally so equipped and the tendency doesn't seem to be to add trailers in any great number. A good case can be made for the trailer in the paper trade and these facts are worth careful consideration by the fleet boss or the plant manager. After all, the trailer is an economy, properly used, an economy in dollars and cents and in time saved. If trailers will give greater haulage capacity to a fleet without increasing its gasoline costs greatly, the arguments against the trailer system are not strong enough to offset these advantages.

There are, naturally, certain paper mills and wholesale plants where local conditions make the use of the trailer or semi-trailer almost out of the question. But this condition isn't general. The larger newspapers are utilizing trucks widely for newsprint delivery and the trucking contractors handling this haulage certainly know what they are about. Trailers are in use in most of the big eastern paper mills as well.

The time has come when the operators of large truck fleets in the trade must give some attention to the price of motor fuel. Heretofore, their attention has been largely taken up with matters of motor depreciation, tire costs and route time consumed on the part of drivers.

The rising price of fuel and the likelihood of continuous advances make necessary the careful consideration of any idea or system that will cut down fuel cost by increasing carrying ability of each gallon of fuel.

Will the Trailer Do It?

Quite naturally, there has been some revival of interest in the motor truck trailer and semi-trailer with constant advances in the cost of gas. Leaders in the trade with large fleets of varied tonnage units recognize the obvious advantages of adding trailers to get greater haulage but they fear that the trailer system won't exactly apply to their business and they hesitate.

It is interesting for those interested in the transport end of the trade to examine the widespread use

of trailers by transport contractors who have had to make a careful study of haulage costs. Numerous trucking contractors are already serving the trade in its many branches of transportation. The contractors have generally adopted the trailer as a partial solution to lower transport costs and their lead would seem to be worth every consideration.

There is an old slogan to the effect that a locomotive will pull many times more than it will carry. This principle as applied to the trailer idea is said to fit perfectly. To heap merchandise on the truck running under its own power reduces its capacity for pulling appreciably. The advocates of trailer transport in the trade hold this out as one of the strongest arguments for 100 percent trailer equipment.

Some figures recently supplied the trade by Mr. H. W. Raymond, an authority on the subject, go far to prove that the trailer and semi-trailer system of trucking is economical for the trade or at least for the majority of plants in it.

Mr. Raymond gives the following comparisons for study:

Investment in 1 tractor and 3 semi-trailers	$ 7,850.00
Investment in 3 5-ton trucks	15,900.00
* * * *	
Depreciation on tractor and trailers as above	4.34
Depreciation rate on 3 5-ton trucks	10.57
* * * *	
Total operating expense of tractor and trailers	21.15
Ditto on the trucks	62.84
* * * *	

Savings in Plant Haulage

The larger plants in the trade operating many trucks face serious losses through driver loafing time and engine idling time at plant platforms and at terminals. It is claimed that the trailers and semi-trailers eliminate a lot of this waste motion as they merely have to be coupled and uncoupled to the tractor in order to be handled with despatch.

There undoubtedly is a strong argument here.

A large part of the haulage in the trade consists of short hauls to and from terminals and warehouses and while city traffic congestion has been one argument against the trailer, careful routing of trucks and trailers has proved to offset this argument to a great extent.

The trailer that can be detached for any length of time while the tractor remains busy elsewhere is an economy around any of the plants in the trade as organized today.

It is interesting to note the savings that are possible in depreciation. There is over 100 per cent difference, alleged, in the depreciation between the tractor and three trailers and the three 5-ton trucks used here for comparison as having the same approximate capacity insofar as haulage is concerned. Those plants with large fleets and finding their transport costs rising steadily will find in the adoption of the trailer wherever feasible an immediate attack on the rising costs of transportation, both on long and short hauls.

The prevalent tendency in the trade to overload trucks is to some degree corrected by a liberal use of trailers and semi-trailers. This reduces the depreciation rate considerably.

Some of the plant managers in the trade have advanced the idea that their loading platforms are not equipped for trailer haulage, that they are not organized for it.

This, undoubtedly, is a short-sighted view of the matter. Fleet bosses know well that simple reconstruction costs in loading platforms are repaid a dozen times over if these changes will facilitate the getting of heavy stocks in and out of the doors and off the platforms. Loading platform congestion is one of the serious management problems in the trade.

Summing Up the Facts

In considering the utility of the trailer for the trade, then, we have a number of certain facts:

a—They enable the tractor to keep almost constantly under power and at work while loading and reloading is progressing.

b—They show a lower rate of depreciation—100 per cent lower than equivalent capacity in single trucks.

c—The original investment in equipment is less, where capacity is identical.

d—The operating costs are about one-third, with capacity the same.

It is generally believed by those who have studied industrial transport that the looked for rise in the price of motor fuels over the next decade will force a wider utility of the trailer system in all industrial hauling. This will affect all heavy goods trades, some more than others. It will be necessary to get a higher mileage rate out of each gallon of gasoline and of oil on the part of big industries, and it is probable that the only feasible way to do this is to increase the carrying capacity of the power unit by the addition of trailers and semi-trailers. If such is the case, the matter is worth close study now.

Near accidents cost ten times as much as real accidents, says the superintendent of a prominent paper company. There are one hundred times as many near accidents as there are accidents involving personal injury.

Where steam mains are laid underground, the location of the flanged joint should be marked in some way in the pavement or roadbed, so that they can be easily identified in case it becomes necessary to uncover the pipe. Such locations may be identified by driving a steel pin into the ground, or, if paving is present, insetting an identifying stone.

Editorial Comment

By WILLIAM SIBLEY

Interesting Employees in Sports

THE encouragement of sports and outdoor activity, not only in educational institutions but in the personnel of countless industrial organizations, is one of the gratifying tendencies of the day. Such activity develops character, the sense of team-work, co-operation, self-reliance and health.

Recreational activities may well be encouraged by nearly every management, since such activity brings those in different occupations together and makes for better understanding between management and men. Wherever such encouragement is given, however, the activity should be very largely turned over to the working personnel, and the supervision of athletics and recreation should be in the hands of committees made up largely, if not entirely, by workmen. In some cases, local committees have been made up of members who have shown inherent leadership and ability, regardless of position, but in the majority of instances the absence of managing executives is more to be desired than their presence. It is common for the management to donate, however, suitable ground for such activity.

In one Pennsylvania plant, recreational activities have proven highly profitable. The men are running the affairs in a businesslike manner, with little or no friction. Dues are collected from the entire personnel, and these funds are invested in athletic equipment. On a site donated by the management the men, in their spare time, have erected a splendid grandstand and thoroughly prepared the field in a capital manner. Boxing, wrestling, baseball, football, soccer and other games are held in this field frequently, and are well patronized not only by the men themselves but by their families and friends.

Many of the larger organizations have found it more satisfactory to erect a recreational center on a suitable area close to the plant. These layouts vary from a rude clubhouse with limited facilities to beautiful country clubs, with tennis courts, swimming pools, bowling alleys, etc. The underlying aims should be the same in all cases, however; that of making the employee feel that it is his or her club, and that the individual membership dues are going to come back in the form of personal privileges and benefits. Membership dues are collected and handled, as well as the running of the club, by the employee-members.

One large company in Cleveland solved the problem of employee recreation in a successful manner. For years it had been the practice of this company to give its employees an outing at some resort. With the force grown to about 2,000, however, this practice was getting to be costly and somewhat unwieldy. It was decided, therefore, that with the money ordinarily spent for these picnics the company would purchase a plot of ground along the lake front. Two simple, but well-planned, clubhouses were erected, one for the women and one for the men. Baseball diamonds, tennis and handball courts were built. The clubhouses were equipped with lockers and showers in the basement, while the main floor consisted of a large room with a fireplace at one end and a stage at the other. This great room was attractively furnished and is used either as a lounging space or made to provide space for card parties, dances, or other entertainment features. During the summer season each department has the use of this facility for individual department picnics, while the grand "free-for-all" outing occurs during the autumn.

In the case of small organizations a private recreation center is often impossible. For such cases the community athletic fields can be used to advantage. For indoor sports, the local Y. M. C. A. is usually readily available. Annual field days and outings are not out of the question for small concerns, and it will be found that such activities, when well directed, will result in augmented good fellowship and increased fraternal feeling. That "belonging instinct" which is the natural concomitant of such activities is worth much to any organization.

Radio as a Guiding Force

NOT long ago we inserted an editorial in these columns to the effect that within the coming ten years we would see great airplanes, freighted with Montana wool or Georgia cotton, plying their aerial way to the textile mills of New England—without a man on them. We maintained that such planes would be guided entirely by radio, dispatched by one station and caught by another; that the propelling mechanism would be perfected to a degree that self-operation for a period of 24 hours would be assured.

Upon reading that editorial a friend took occasion to laugh us to scorn, and wondered audibly "how in the world such a magazine as this could print such stuff." For him the idea was utterly beyond the scope of his imagination, while our assurance that water boats have already been guided by radio in various experiments was received with considerable doubt. Since this friend is endowed with average intelligence we are now wondering how many other

—— on Timely Subjects

readers of that editorial entertained a similar reaction to our prophecy.

We grant that it is a bit difficult for the unschooled in the far-reaching developments that are rapidly rising on every hand to grasp the likelihood or importance of such a fulfillment. This difficulty, however, does not in any way alter our original conviction. Indeed, we find increasing evidence of its speedy development, for only a few weeks ago a passengerless automobile traveled up Broadway and down Fifth Avenue (New York City) through the thick of the traffic jam—guided entirely by radio. And it is conceivably a harder task to guide an automobile through traffic than an airplane through the air.

The radio-controlled car that gave such a splendid account of itself on the streets of New York was the material form of an idea belonging to Francis P. Houdina, an engineer in the U. S. Army. Mr. Houdina has been working on his idea for a number of years but only recently has been able to publicly demonstrate the principle involved.

Encouraged by this recent demonstration, we now amplify our original contention by asserting that the perfection of this radio-control scheme will eventually permit one driver and one master truck to guide a fleet of ten or more trucks, laden with freight, from town to town. This principle may extend also to suburban trains where the minimization of crew equipment would mean much to the economy with which commutation service might be given. To provide a chief dispatcher with a radio-control enabling him to guide, start and stop several trains loaded with commuters is not outside the bourne of possibility. Such a development will probably not crystallize soon. Railroads are large bodies, and large bodies move slowly. In view of actual performance, however, it behooves us to withhold our laughter for at least a few weeks.

Plant Cafeteria Results

RECENT investigations of the results being obtained in many types of industries with employees' lunchrooms show some interesting facts. In one case 44 manufacturing plants were solicited for data. These plants were located throughout the East and middle West, and the total number of employees in all was 87,636, male and female. It was found that about 34 per cent of the employees in each plant went home for lunch, or else preferred to carry their own lunch. Over half of the concerns were located in small communities, but many of the workers patronized the cafeteria in preference to going home.

The average value of the equipment in each plant was found to be $7,752. The average weekly wage for cooks was $34. Helpers in the kitchen, including dining room attendants, averaged $20 per week. Kitchen crews are full-time workers in nearly every case where the hours of service are from 7 a. m. to noon.

In most instances, cashiers were recruited from among the office workers. They receive an average of $4.25 weekly for this extra time spent in the cafeteria. A similar practice is followed in the case of serving assistants. Plant employees who also work in the cafeteria receive an average of $3.30 weekly, while outside help of this nature is paid from $5 to $7.50 per week. Bus girls and boys receive an average of $2.50 weekly, and in nearly all cases are employees of the concern.

The total upkeep for broken dishes, repairs to equipment, etc., averaged $29.15 weekly for each plant. This is not excessive, especially if it is considered that dish-washing and serving is performed by part-time workers.

It was found that the average noon meal expenditure was 55 cents. The receipts per week averaged $1,650.25 and the total operating cost was $1,426.10, leaving a margin of $224.15, thus indicating that a plant cafeteria can be a financial success, as well as a convenience for the workers. In the interest of economy it is always advisable that an efficient manager be hired to do the buying, plan the menus, and run the whole cafeteria on a businesslike basis. The salary for such an official will average about $40 a week.

More than 60 per cent of the plant cafeterias in the country have entertainment, ranging from phonograph music or radio to dancing, during the noon hour. Many have provided comfortable rest rooms where employees may enjoy a social period after lunch.

If the proper means are taken to develop a desire on the part of the employees for a cafeteria, and if they are then kept interested in patronizing the institution regularly, through the provision of wholesome, clean food at moderate prices, an appreciable improvement in the health and efficiency of the personnel will result.

Observations of a Traveler

(Continued from page 199)

azines in all, supply groundwood pulp and there are three sulphite digesters with a capacity of 70 tons of pulp daily.

The Staff House operated in connection with the mill has been designed for the accommodation and comfort of the mill executives and heads of departments. It is equipped on the plan of a modern hotel with the latest cooking and sanitary appliances. Though zero weather prevailed at the time of our visit and little was to be seen but frozen rivers and lakes and snowy wastes, from the windows of the commodious parlors and social rooms, furnished in exquisite taste, there could be viewed a great stretch of country, comprising timber tracts and chains of lakes, so that in the summer months it must be one of the most delightful resorts imaginable.

Machine Shops and Storerooms

When one considers the remote situation of many of the larger pulp and paper plants, the extent of their operations and the massive machinery employed, it is not to be wondered at that the machine shops and storerooms connected with these mills are of extraordinary extent and astonishing capacity. The machine shops differ in small degree from a regular engineering establishment and enormous quantities of spare parts and other supplies are housed in the storerooms to be issued on requisition by the engineers and master machanics.

In the remoter districts of Quebec, along the St. Maurice and Saguenay rivers and near Lake St. John, the mill storerooms and machine shops grow in size and capacity, some of the shops having as many as thirty or forty men working in them. The same is true of many of the larger mills in the United States which are equipped with radio drills, boring mills, lathes, presses, oil jacks, as well as a complete assortment of millwright's tools.

At these mills great quantities of steel and iron are bought in the raw state for conversion, for some of the mills operate foundries and casting plants and are independent of outside concerns as regards machine construction and the manufacture of bushings.

At one mill visited recently, the machine shop is equipped for making its own rotary screens and the bronze plates could be seen in process of slotting and bending. In another machine shop, sprocket wheels for wood conveyors, 76 inches in diameter, were being designed, and in the millwright's tool shop, acetylene welding was going on.

The whole of one afternoon was taken up with an inspection of the mill supply room of a big Canadian newsprint mill, the most extensive and well supplied storehouse of any mill yet visited. As might be expected a liberal supply of spare parts are kept in stock, among other items noted being sixty or seventy extra motors, while the supply of wire glass and plain glass of various thicknesses was of astonishing proportions, exceeding that of many a wholesale glass house.

During the meeting of the Institute of Electrical Engineers in Cleveland, a report of which is given in the April issue of THE PAPER INDUSTRY, the opportunity was presented of visiting the mill of The Jaite Company, at Jaite, some twelve miles out of Cleveland on a branch of the Baltimore and Ohio R.R. The mill is beautifully situated and is well supplied with water and fuel. Prior to the World War, all kraft pulp used in the manufacture of the bag paper specialties of the Jaite Company were purchased from the Brown Corporation, but soon after the war broke out the products of the Brown mills was commandeered by the British government and it was then that C. H. Jaite started to make his own pulp and build a recovery furnace.

Trip to Cleveland and the Jaite Mill

Instead of using the ordinary evaporating system for the black liquor, he conceived the idea of evaporating the liquor within the furnace and effecting complete combustion with subsequent smelting of the soda. He figured on a certain fuel value in the liquor, estimated at 48 per cent. After the furnace was heated to the required degree of temperature by natural gas, the gas was cut down to 2,000 ft. an hour, the furnace being kept heated from the combustible constituents of the liquor and a small amount of gas. No use was made of the heat produced. The gas was forced into the bottom of the furnace through tuyeres.

The first furnace was built of reinforced cement and had a height of 35 ft. and an inside diameter of 8 ft., with a 4 ft. diameter outlet. The furnace was lined with electro-magnesium bricks made by The Stowell-Fuller Company of Cleveland.

The black liquor was sprayed in at the top under 75 lb. pressure, the sprayer being obtained from a Buffalo firm. After the furnace was first started in 1917, it was operated for three years without special attention, except for relining with bricks once a year. The tuyeres were of steel double piping half way, the air pressure being sent through tin pipes into the 4-inch tuyere pipe. The pipes were water cooled and the heated water was used in a causticizing system. No provision was made for the recovery of alkali from the flue gases.

The Jaite Company operates a three-cylinder machine for the manufacture of heavy bag paper from a mixed furnish of kraft, manila, rope and other jutes. A recent addition to the existing three-cylinder machine is a Fourdrinier part made by J. H. Horne & Sons Company on which 40-lb. kraft paper was being produced at the time of the visit. The arrangement of cylinders and Fourdrinier machines is an interesting one. The three-cylinder part can be run independently of the Fourdrinier, or the Fourdrinier run independently of the cylinder part, as it was running during our visit. But both the cylinder and the Fourdrinier can be run at one time to make a duplex paper.

The Fourdrinier part has 75-ft. wire with suction couch roll and represents a modern up-to-date machine suitable for making almost any grade of paper, but particularly adapted for Jaite bag paper. The table rolls and breast roll are equipped with ball bearings and there are five flat boxes, with one additional press part which gives three presses for the Fourdrinier or four presses for the cylinder part and there are four additional dryers, altogether an unusual but most effective arrangement for the particular requirements of this mill.

Tentative Program of the Seventh Annual National Convention of the American Pulp and Paper Mill Superintendents Association

To be Held at the Book-Cadillac Hotel, Detroit, Michigan, June 3, 4 and 5, 1926.

THURSDAY, JUNE 3, 1926

8:30 A. M.—Registration.

10:00 A. M.—Opening Session.

a—Invocation.
b—President's Address.
c—Mayor's Welcome (John W. Smith, personally).
d—Response.

11:30 A. M.—Board men will leave for Monroe, Mich.

12:30 P. M.—Luncheon, Book-Cadillac Hotel.

2:30 P. M.—Divisional Meetings.

(A)—Book and Fine Writings Division. Chairman, Carl Magnus, Standard Paper Mfg. Co., Richmond, Va.

Subjects:

The Passing of the Deckle Strap.—S. Carroll Wentz, of the P. H. Glatfelter Co., Spring Grove, Pa.

Cooking and De-Inking of Old Papers.—Alfred Bryant, of the Bryant Paper Co., Kalamazoo, Mich.

The Application of Hydrogen Ion Control in the Manufacture of Pulp and Paper.—Dr. W. A. Taylor, of the Lamotte Chemical Products Co., Baltimore, Md.

Another subject—yet to be announced.

(B)—Chemical Pulp Division. Chairman, Benjamin T. Larrabee, S. D. Warren Co., Cumberland Mills, Maine.

Subjects:

Digester Bricks.—August Richter, Stebbins Engineering Corporation, Watertown, N. Y.

Other subjects that are yet to be definitely arranged for are: "The Handling of Chips by Means of Air"; Manufacture of Pulp by the Keebra Process"; Phases in the Manu- of Soda Pulp."

(C)—Board Division.

The Board men leave for Monroe, Mich, at 11:30 A. M., have lunch at Monroe, and following the presentation of two or three papers of importance to their line of work—subjects yet to be named—visits will be made to the different mills in that city, and return to Detroit by 6 P. M.

7:00 P. M.—Banquet.—Ladies and men (Community Singing at Banquet).

Toastmaster.—Leo Fitzpatrick, "Merry Old Chief" of the Kansas City Night Hawks.

a—Orchestra and singers.
b—Edgar Guest, poet and humorist.
c—Vaudeville.
d—Senator Couzens.
e—Singers, etc.
f—Geo. E. MacIlwain, Cambridge Associates, Boston, on "The Next Six Months."

Broadcast program from WJR and WCX, 30th floor Book-Cadillac Hotel.

FRIDAY, JUNE 4, 1926

9:00 A. M.—Business Sitting.

The following papers and others will be divided over the three days' business sessions.

Humanics and Organization Development.—John S. Schumaker of Parker-Young Co., Lincoln, N. H.

Cut Handling Costs with Industrial Trucks.—Harold J. Payne of the Staff of the Society for Electrical Development.

Modern Merchandising of Paper and Its Relation to Production.—S. L. Wilson, American Writing Paper Co., Holyoke.

Lubrication, an Important Factor, Affecting Cost of Conversion.—T. E. Dial, Vacuum Oil Co.

Future of the Wood Supply for the Paper Industry.—Dr. Hugh P. Baker, Secy. American Paper & Pulp Assn., New York.

The Tie That Binds.—W. M. Purdy, Gerrard Wire Tying Machine Co.

Waste.—B. T. McBain, General Manager, Columbia River Paper Mills, Vancouver, Washington.

12:30 P. M.—Luncheon at the Book-Cadillac Hotel. Orchestra and Singers.

2:00 P. M.—Industrial visit to Ford Plant, River Rouge, for ladies and men, via bus and autos.

7:00 P. M.—Men's Banquet. (Community Singing at Banquet).

Toastmaster.—C. A. Blaney (Formerly President of Eddy Paper Co).

a—Orchestra.
b—Governor Alex Groesbeck.
c—Response. Felix Pagenstecher, president Bryant Paper Company.
d—Lew Shanks, Mayor of Indianapolis, humorist, etc.
e—Vaudeville.
f—Variety of dancing teams and vaudeville acts and high-class singing.

SATURDAY, JUNE 5, 1926

9:00 A. M.—Business Sessions. (See papers above.)

12:00 M.—Luncheon. Ladies and men.

a—Music—orchestra.
b—Quartette.
c—Vaudeville.

LADIES' PROGRAM

June 3, 1926

Morning trips "on their own." Transportation and guides provided by convention committee.

12:00 M.—Luncheon at Detroit Yacht Club.

a—Ride around Belle Isle.
b—Aquarium, Botanical Gardens.
c—Ride to Grosse Pointe, Boulevards, etc. (in charge of competent guides).

7:00 P. M.—Joint banquet with men.

June 4, 1926

In morning and forenoon cars will be at service of Ladies for any trips to stores, over to Canada or elsewhere. Guides, cabs, etc., furnished.

12:30 P. M.—Luncheon at Book-Cadillac (Flowers and Favors).

2:00 P. M.—Trip to Ford Plant with the men. (By automobile.)

6:30 P. M.—Dinner at Road House. Musical program and entertainment furnished at dinner.

8:00 P. M.—Theater party.

June 5, 1926

Morning free to do as they please. Transportation will be furnished.

12:00 M.—Joint program and luncheon; ladies and men.

Convention members register at special registration desk on ball room floor of Book-Cadillac Hotel

Agriculture Officials Meet with Paper Men

Second Annual Conference Brings Out Valuable Contributions and Co-operation

THE second annual conference between the officials of the Department of Agriculture and the Advisory Committee of the Pulp and Paper Industry to the Department of Agriculture was held at the Cosmos Club, Washington, D. C., April 29th, 1926.

The conference with George W. Ostrander, of Finch, Pruyn & Co., acting as chairman, and Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, acting as secretary, was well attended by both the members of the Advisory Committee and officials of the Forest Service. Closer co-operation between the paper industry and the Forest Service was the result of the day's proceedings.

Secretary Jardine Addresses Committee

Following the luncheon given by the American Paper and Pulp Association, Secretary of Agriculture Jardine addressed the Committee as follows:

"The Advisory Committee of the Pulp and Paper Industry to the Department of Agriculture was originally created by my predecessor, the late Secretary Wallace," Mr. Jardine continued. "Its object is to discuss timber growing and timber utilization problems in which the industry and the Department have a joint interest. Such discussions are good in themselves; but they are doubly good when they lead to action. I hope the relations of this Committee and the Department will be such as to help you in your raw material problem. I feel sure that your advice will be helpful in our research, in our forestry education work, and in our program for carrying out the Clarke-McNary law.

Industrial Forestry Making Progress—"There is a great deal of talk nowadays about industrial forestry. The signs are encouraging. Large companies here and there are reorganizing their holdings on the basis of timber-growing and continuous operation. Other companies are investigating the subject. We are undoubtedly making progress.

"The Department of Agriculture is anxious to get more and more of this talk precipitated into action on actual jobs in the woods. It is anxious to have the forest-based industries come more closely to grips with the problem of their raw material. In this attitude the Department is, of course, thinking primarily of the public need. Your industry is one of the key industries; you have created a commodity without which the intricate modern world could not function.

"I need hardly remind you that the raw material problem of the pulp and paper industry is perhaps more acute than that of any of the other wood-using industries. It is gratifying that your industry is concerning itself so seriously with this problem in all its phases, including that of timber growing and timber saving. This conference itself is one more token of that concern.

"There has been in the past a vast amount of talk—I think a disproportionate amount of talk—on the **costs of timber growing.** It would hit nearer the truth and be better psychology if we investigated more and talked more of the savings of timber growing. I am not thinking merely of savings in the public interest, but of industrial savings as well.

"One important saving brought about by timber growing will be maintaining value in cut-over lands. I need not tell you that cut-over land has become a drug on the market. There are scores of millions of acres of it that will never be used for farming; there are other millions that may sometime be used for farming but not soon enough to prevent growing one or more crops of timber on it. Indeed, it is probable that our present forest area of about 470 million acres (which includes cut-over and denuded lands not used for farming) will remain constant or it may possibly even increase in the next few decades.

"This vast acreage constitutes about one-fourth of the total area of the United States. The public advantages of growing successive timber crops on this land are apparent. Using this land in an organized productive way would give healthful employment for hundreds of thousands of people and would yield no mean increases in our national wealth.

"These are obvious public savings. But are there likewise industrial savings that may warrant timber-growing as an enterprise for the land owner?

Keeping Forest Lands Productive—"In the first place let me say that during the last few years the Department, through the Forest Service, has been studying the practical measures necessary to keep forest lands productive. It has studied them in every forest region of the United States. We are just now printing the first of these studies—that on 'Logging and Timber Growing in the California Pine Region.' These studies are going to remove a good deal of the mystery associated with the word **forestry.** They show that timber-growing is a less formidable and complex thing than most people supposed. Good protection against fires, including special precautions with slash, seed trees, the saving of advance growth from destruction—these are the main measures to assure a second crop. It may not be a full crop, or the most valuable crop, but it will be a crop worth logging.

"We all know about the costs and the obstacles to carrying these things out. But what of the positive, constructive side of the picture? These measures will give value to cut-over land. The growth of industrial forestry will, in my opinion, create a positive demand for land well-stocked with young forests. And besides, of course, the State and Federal Governments are likely to buy a good deal of this sort of land in the next few decades. Denuded land on the other hand will likely decrease in value as speculative farm colonization decreases.

Bare Land or Stocked?—"But what of the owner who holds this land? He can hold it bare or he can hold it stocked. If he holds it bare and lets fire keep it bare, it grows nothing but taxes. But if he has cut his original timber in such a way as to let the land restock naturally, the soil and the sunlight—makers of wood—will work for him with the ceaseless vigor of nature.

"If the timber owner is also a timber manufacturer, continuous timber growing will save him from amortizing his plant investment. If the owner will figure the amount of this saving, he will find it a very material sum to offset against the cost of restocking and protecting his land. And in addition to material investment, there is the large intangible investment of trained personnel and perfected organization which are so costly to scrap either from the industrial or the social standpoint.

"Timber growing means permanency of industry and this permanency gives opportunity for working out a co-ordination of manufacturing plants that will use the forest crop without waste. The one-factory type of forest utilization is as bad in the long run as the one-crop type of farming; they both result in the long run of soil depletion. One long step in the direction of diversified forest utilization will be to find ways and means to use for paper pulp some of the millions of tons of wood now wasted as small or cull logs, limbwood and sawmill trimmings. The utilization of this waste will not only prolong our timber supply, but it will make timber growing much more profitable because it will use the timber crop much more completely.

"Our large scale forest industries are uniquely equipped to undertake timber-growing. Many of them have large reserves of old timber that will tide them over until the young

crop matures. In your own particular field, you have the advantage of being able to use timber that grows to pulp size in a comparatively short time. A large company or corporation ordinarily looks forward to a very long life which fits it for the forestry enterprise. It has stability and a long look ahead. It usually has financial resources not only to maintain itself, but to build up its plant and to reach out for raw materials. It can command men of vision and creative intelligence.

"The project of forest rehabilitation has the largeness and the romance that our great projects of railroad construction had a half century ago. And because it is in the highest sense a constructive enterprise it will command financial support of the American people. As a stable, long-term investment, founded on the splendid security of soil productivity, I venture to predict that rehabilitation of our depleted forest lands will become a more and more attractive outlet for our surplus capital. Why seek foreign enterprises when nearly a fourth of our land threatens to go to waste for lack of constructive handling? Here is a challenge to our financial genius. Pioneers are already breaking the way. It is a field that should appeal to leaders of forest industries who want to build their house on a rock instead of sand."

Forestry and the Paper Industry

Dr. Hugh P. Baker of the American Paper and Pulp Association, presented the following statement on the subject, "What Is There for the Paper Industry in the Practice of Forestry?"

Dependence of the Paper Industry Upon a Permanent Supply of Wood—Since the beginning of the general use of wood for the manufacture of paper in the United States in the late seventies, there has been a constant and an increasing consumption of wood by American mills. On the basis of improved methods in the reduction of wood to pulp and in the use of pulp in the manufacture of paper, coupled with the greater use of pulp for commodities which are essentially paper, though not generally so classed, there is every reason to expect that the paper industry will call for a constant increasing amount of woods in the years ahead.

The million cord mark was passed about 1890. Steadily since that time, consumption of wood has increased. In 1924, it is estimated that the total pulp wood requirements, figured on basis of production, imports and equivalents in cords of pulp and paper imported, was more than 10,000,000 cords. 1925 saw this figure somewhat increased, and based upon rate of increase during the past ten years, it would appear that the consumption for 1926 would be more than 11,000,000 cords. It must be kept in mind that this total figure is very much larger than the figure of reported production of pulpwood in this country which has increased rather less rapidly than the converted pulpwood figure. In 1924 we produced 4,488,107 cords and imported 1,279,975 cords. Recent report from the Department of Commerce indicates for 1925 an aggregate consumption of 5,840,000 cords, an increase of slightly more than 1 per cent over 1924.

Although the annual consumption of pulp wood by the paper industry has increased steadily, and although the industry may be said to depend absolutely on a permanent supply of wood, nevertheless in considering the larger problem of production and consumption of wood from the forests of the country, it should be kept in mind that our production of pulpwood represents only about 4 per cent of the annual wood cut of the United States.

Some very interesting changes are going on in the industry in its dependence upon certain species of wood. With increasing difficulties in getting satisfactory supplies of spruce and balsam and hemlock, there has been a turning to the jack pine in the north and the rapid growing pines of the south, and there is real promise of use of these rapid growing pines. The cordage of hardwoods consumed has been increasing steadily and it is reasonable to assume that increasing use of hardwoods will, to a certain extent, tide over the shortage of soft woods to the time when second growth and new forests of soft woods come to commercial maturity.

Sources of Supply of Pulp Wood—It is interesting to note that in 1924, Maine led in the production of pulp wood in the United States. She was followed closely by Wisconsin which produced approximately 1,000,000 cords. There was then a big drop to New York which produced about 315,000 cords. Minnesota, Pennsylvania and Virginia come next, and Michigan is well down the list with a production of 165,000 cords. The west coast states are still producing, but moderately, though doubtless their production can be considerably increased. Over a million cords was imported from Canada in 1924 and it is anyone's guess as to the future of the supply of Canadian wood for American mills.

One hears considerable discussion today as to the possibility of the importation of wood from Northern Europe. A trial cargo of 2,000 cords was brought from Finland by one of the larger mills a short time ago. This wood was apparently satisfactory with the exception that it was not in the right length and was not free of bast. It may be that more wood will come from Baltic ports, but it is not reasonable to assume that freight rates will allow of any large or permanent qualities of wood from Europe.

Even a slight increase in the cost of wood makes possible the securing of wood in this country which has, in the past, been somewhat inaccessible. There is little reason to indicate that our present production of wood cannot be maintained for some years.

Necessity for Accurate Information as to Present and Future Supplies of Pulpwood—Surveys by the U. S. Forest Service and various state departments have given us quite satisfactory general information as to available supplies of pulpwood in the country. The bulletin entitled "How the United States Can Meet Its Present and Future Pulpwood Requirements" put out by the Forest Service at the request of the paper industry, through the Association, is a very excellent report and gave the best information available, up to the time of its publication, on the pulpwood situation.

The industry itself has felt each year a keener need for more accurate information as to pulpwood in the different papermaking regions and to meet this need the Association put a forester onto its staff last year and a field study of two months was made by this forester in the Lake States. This study resulted in report on "Pulpwood in the Lake States." Mr. Crocker, the forester, is now in North Carolina and Virginia for six to eight weeks, and following his field survey a report on that section will be prepared. It is the purpose of the industry to cover each of the regions with these general reports and then begin even more careful studies of states or more limited areas under the control of individual companies or groups of companies.

It would be very desirable if the various papermaking states could carry out such surveys as the economic survey in Michigan, which is now under way. It should be possible in time for the industry to have very accurate information as to available stands of timberland, of pulpwood in these stands, etc.

Practice of Forestry in the Paper Industry Essential in Assuring a Permanent Supply of Pulpwood—The same factors which have delayed the practice of forestry generally in the country have delayed the beginning of forestry in the paper industry by the pulp and paper manufacturers owning timberlands, and by the same token the conditions which are gradually resulting in a situation that may make the practice of forestry possible are causing pulp and paper manufacturers to consider seriously the practice of forestry on lands now owned and on lands which may be acquired to fortify their plants with a permanent supply of wood.

Unlike the lumber industry, which does not seem to be interested in its permanency, and for obvious reasons, the paper industry is one of the most permanent of the American industries as to location of plant, development of satisfactory operating force, etc. Therefore, the pulp and paper industry should be the first of the larger wood using industries to put its forest lands under careful forest management.

That the executives of the paper industry are thoroughly interested in forestry as a means of insuring a permanent supply of wood is evidenced by such organizations as the Wisconsin Forest Protective Association, which has just held a meeting in Wisconsin to consider recommending legislation to the State that would result in conditions favorable to the handling of forest lands by the mills on a permanent basis. As is so well understood, the two factors which have prevented general practice of forestry by private owners are holding back forestry in the paper industry. In other words, forests

must be more effectively protected from fire and state tax laws must be so changed that the principle of the yield tax, or some similar principle, must be applied to make it possible for the paper manufacturer to grow timber on a business basis.

In this connection, it might be said that a third factor influencing the practice of forestry in the paper industry is the application of research. The pulp and paper manufacturers in the Lake States are particularly appreciative of the location of the Forest Experiment Station at the University of Wisconsin, and are confident that Mr. Zon and those associated with him will be able, through research, to be of very definite assistance in solving local problems, particularly as affecting protection of different types of forests from fire, renewal of the forest, proper cutting, use of new species, etc.

How Forestry Is Being Practiced in the Paper Industry—No other wood-using industry has taken so much direct interest in forestry in the past 25 years as has the paper industry. For years some of the larger companies have employed foresters and before the employment of these foresters, had practical woodsmen in their employ, largely for the purpose of protecting the forests from fire and operating in the forests so as to give the largest possible returns, and in such a way as to insure future returns.

Just as the transmission of electric power may be said to have been applied practically in this country first by a paper company, so it may be said that the first practical management of woodlands by any of the industries using wood was carried on by the paper industry.

While there are outstanding examples of the practice of forestry by pulp and paper companies in Canada, and more publicity has been given to this work by Canadian companies, yet the forestry work by such companies as Great Northern Paper Co., Eastern Manufacturing Co., S. D. Warren, and others, will be considered in the future as notable examples of early appreciation of the application of principles of forestry to stands of timber, whether such work be known as technical forestry or not.

Today a number of companies which have operated successfully many years without owning timberlands of any kind have adopted the policy of the purchase, not only of lands covered with timber, but of cut-over lands which may be brought back to a profitable forest condition. Such companies might be listed as Hammermill Paper Co., A. P. W. Paper Co., Cornell Wood Products Co., Mead Pulp and Paper Co., and other companies.

These examples are given merely as evidence of the vital concern of the pulp and paper mills of the country in fortifying the industry with a permanent supply of wood. It is hardly necessary at this time to ask the question as to what there is for the paper industry in the practice of forestry. That question has already been answered by paper companies which have had foresters in their employ for ten years and more.

Foresters in the employ of the paper industry have not always practiced what might be defined today as technical forestry. In some instances they have been engaged largely in the procurement of wood and yet, because of their forestry training, these men have been instrumental in gradually bringing their organizations to see the necessity for proper organization for the protection of forests from fire, possibility of securing profits from careful cutting of timber, and in so handling cut-over lands as to insure a second crop of timber. We are on the way, in the paper industry, yet we need the interest and the assistance of the Federal Forest Service, of State Departments of Forestry, and of organizations of professional foresters. All of these agencies can render assistance that will assist the industry in applying forestry on a more practical basis, and on a basis that will make for the insuring of the industry with a permanent supply of wood. In other words, the industry has come to the point where it is ready to grow wood, and it must have the assistance of forestry and foresters in accomplishing this end.

Operating Costs in Forest Management

Mr. George N. Ostrander, Finch, Pruyn & Co., Glens Falls, N. Y., presented a statement on the "Costs of Specific Operations in Practical Forest Management and the Practicability of Investing at this time in Forest Management. Mr. Ostrander said in part:

"Before definite and intelligent plans can be formulated for handling any forest for lumber or pulpwood production, all essential facts must be known and must be presented in a usable form. This requires considerable rather expensive field work.

"This field work in the Adirondacks has cost fifty to sixty cents per acre in recent years. The maps are made up on a scale of eight inches to the mile and this makes the map of an Adirondack township a little over four feet square. The necessary office work, consisting of the final computations and map making has cost from five to ten cents per acre.

"Costs of fire prevention include patroling, posting fire notices, fire pumps, and other fire fighting tools. We have had no serious fires in 16 years. Several of the State fire towers overlook our holdings. Total annual protection costs average about 1¼ cents per acre.

"For several years we have been trying to work toward getting our forest lands on a sustained yield basis and we believe it is not only practical but essential to invest in forest management now in order to be reasonably sure of a supply of wood in the future. We hope to improve our holdings by better methods of handling as rapidly as new methods can be shown to be economically sound.

Other Fundamental Problems on Program

Presentation by members of the committee of other fundamental problems of the pulp and paper industry in the production and use of wood were as follows:

"Insuring the Pulp Mill a Permanent Supply of Wood Best Adapted to the Mill's Needs"—A. C. Goodyear, Bogalusa Paper Co.; "Organizing for Forest Management Personnel, Program, etc."—R. B. Robertson, Champion Fibre Co.; "Financing Forest Management. Necessary Invested Capital, Carrying Charges, Taxation, and Probable Returns"—Charles W. Luke, West Virginia Pulp & Paper Co.; "Present Methods of Logging Versus Those Necessary for Sustained Yield Operations with Costs, etc."—George W. Sisson, Jr., Racquette River Paper Co.; "Methods of Increasing Logging Efficiency; Type of Machinery, Roads, Camps, etc."—H. E. Fletcher, Fletcher Paper Co.; "Rail Haul Versus Driving, Floating, Rafts, Flumes, etc."—F. E. Bragg, Orono Pulp and Paper Co.; "New Pulping Methods and Use of New or Little-Used Species, Including Utilization of Hardwoods and Sawmill Waste"—D. C. Everest, Marathon Paper Mills Co.; "Stream Purification—Physical, Chemical, Financial, and Legal Aspects"—W. G. MacNaughton, Technical Association of the Pulp and Paper Industry; "Reforestation, Natural and Artificial. How Far Can a Paper Company Go in Reforestation Under Present Day Conditions?"—N. C. Head, International Paper Co.

Presentation of Department forestry activities of special interest to the pulp and paper industry:

"Industrial Forestry"—W. B. Greeley, chief of the Forest Service; "Co-operative Forestry under Clark-McNary Act"; "Law"—Paul G. Redington, assistant forester, in charge of public relations; "The Forest Taxation Investigation"—Fred R. Fairchild, economist in charge of tax inquiry; "Silvicultural Research"—E. N. Munnes, chief office of Forest Experient Stations; "Forest Products Research"—C. P. Winslow, director, Forest Products Laboratory; "Forest Economic Investigations"—C. W. Boyce.

Personnel of the Committee

The personnel of the Advisory Committee of the Pulp and Paper Industry includes the following: D. C. Everest, Marathon Paper Co., Rothschild, Wis.; George W. Sisson, Jr., Racquette River Paper Co., Potsdam, N. Y.; George W. Ostrander, Finch, Pruyn & Co., Glens Falls, N. Y.; H. E. Fletcher, Fletcher Paper Co., Alpena, Mich.; F. E. Bragg, Orono Pulp and Paper Co., Bangor, Me.; N. C. Head, International Paper Co., New York City; Grellet Collins, Dill & Collins Paper Co., Philadelphia; Reuben B. Robertson, Champion Fibre Co., Canton, N. C.; A. C. Goodyear, Bogalusa Paper Co., Buffalo; Charles Luke, West Virginia Pulp and Paper Co., New York City, and Dr. Hugh P. Baker of the Association. R. T. Houk, of the Meade Pulp and Paper Co., Dayton, Ohio, also attended the meeting.

Meeting of the National Committee on Wood Utilization

Pulp and Paper Sub-Committee Recommends Study of Seven Definite Problems

THE first meeting of the National Committee on Wood Utilization, held at the Department of Commerce in Washington on April 28, had for its purpose the development of a practical program looking to the perpetuation of the timber resources of the United States through the elimination of waste in the utilization of wood by all industries consumers of this raw material. The session was opened at 10 o'clock by Secretary of Commerce Hoover as chairman, who, in a short speech of welcome to the more than 150 delegates from the wood-using industries, outlined its purposes and emphasized the fact that the Federal Government had not the desire or intention to control the use of wood but wished only to co-operate with and assist the consuming industries in solving their problems of economy in what they believed to be the most advantageous manner.

Mr. Hoover said in part:

"The Lumber Standardization Committee has proved beyond all question what can be accomplished through voluntary action. I am convinced that nothing could be brought about through governmental action. And in any event, even if it could be brought about by legislation, the evils that would be started in the weakening of initiative, the undermining of enterprise, the expansion and extension of bureaucracy, would result in ten times greater liabilities than all the assets that could be attained.

"The work already accomplished over the past four years by the Central Committee on Lumber Standards has been one of the outstanding demonstrations of the possible accomplishment of voluntary organized industry in the United States. It has reduced the cost of manufacture and the cost of distribution. It has reduced waste and the cost to the consumer; it has tended to stabilize industry and increase employment. But the setting up of standards for lumber manufacture is but one segment of the problem. I could discuss at great length the values both to the industry and to the country at large in the elimination of waste in motion and materials. It would be an asset to the producer, to the distributor, and to the consumer."

Mr. Hoover then touched briefly on the past year's work of the National Committee on Wood Utilization under the direction of Axel H. Oxholm, with E. E. Hunt as secretary and Col. W. B. Greeley of the United States Forest Service as vice-chairman.

Chairmen of sub-committees were immediately appointed, who then adjourned to various committee rooms with their members for the purpose of outlining and submitting recommendations for the guidance of the National Committee in carrying on its work over the coming year. The sub-committees were as follows: Construction Industries, Railways, Mines, and Millwork; Container Industry; Loggers and Lumber Manufacturers; Lumber Distributors; Plywood and Veneer; Small Dimension Stock; Wood Chemicals; Wood Preservation; and Pulp and Paper.

Meeting of Sub-committee on Pulp and Paper

In the absence of Norman W. Wilson, President of the American Paper and Pulp Association, owing to illness, Mr. R. T. Houk of the Mead Pulp and Paper Company was designated as acting chairman of the sub-committee on pulp and paper, with Dr. Hugh P. Baker as secretary. Other members attending were L. B. Burt of the National Lime Association, F. W. Willard of the Western Electric Company, William G. MacNaughton of the Technical Association of the Pulp and Paper Industry, John Matthews, Jr., assistant director of the Bureau of Foreign and Domestic Commerce, and N. S. Meese of the Paper Division of the Bureau of Foreign and Domestic Commerce.

The reports of the various sub-committees were presented at 3 p. m. and were adopted practically without discussion. The chairman noted that all reports and recommendations lay particular emphasis on three distinct fields of activity—economic and commercial research, education, and the outlining of definite projects by agreement among the several branches of the wood-using industries.

An agenda for discussion by the pulp and paper sub-committee as prepared after conference between the American Paper and Pulp Association, the Technical Association, and the National Committee included nine specific items touching on current pressing problems of the industry. This number was later reduced to seven through the elimination of the sections on methods of handling and cleaning wood for pulping and on the prevention of stream pollution. It was believed by the sub-committee that these were largely individual mill problems and could hardly have place in the program of the National Committee.

Recommendations of Paper Committee

The pulp and paper sub-committee made the following recommendations to the National Committee concerning the more economical use of wood in the manufacture of pulp and paper:

I—That regional surveys be made of pulpwood resources in the different forest regions of the United States.

As both producers and consumers of wood are vitally interested today in the question of available stands of timber and as the pulp and paper industry is particularly concerned as to future supplies of pulpwood, the sub-committee feels that there is unusual opportunity for the National Committee to assist in a national survey or census that will indicate accurately the amount of timber and wood upon which these industries may depend.

With all of the excellent work which the United States Forest Service and various State Departments of Forestry have been doing in the way of surveys of forest resources, there is yet a definite lack of accurate information as to the pulpwood resources of the United States.

The associations within the pulp and paper industry are attempting to meet this situation by the sending of a forester into the different papermaking regions for field studies and reports. The Lake States have been covered and the forester is now in North Carolina, Virginia and West Virginia for similar studies.

The sub-committee feels that the National Committee can be of great service in co-ordinating efforts along this line now being made by Federal and State agencies and the industries. It should be possible to so co-ordinate efforts as to reduce the expense of forest services now under way or projected.

II—New and seldom used woods and processes for their reduction to pulp.

With the pulp and paper industry facing an increasing scarcity of softwoods such as spruce and hemlock, there is very definite need for a thorough study of the use of woods which have not been generally used in the past or entirely new woods. The Forest Products Laboratory at Madison has made very helpful studies along this line, but there is great need for exhaustive research.

The sub-committee feels that this is a question which concerns not only the pulp and paper industry but the lumber industry and wood-using industries in that such a study might well make available for use certain woods which cannot now be taken out at a profit by the lumbermen. Therefore, we

recommend that the National Committee assist in bringing the various wood-using industries together for a carefully co-ordinated study of this problem.

III—Co-ordination of lumber and pulp mills.

The saving of wood waste, which is probably the most important phase of better wood utilization, is a question of great importance in the paper industry today. The great quantities of waste from saw mills now being burned either for fuel or steam might, under certain circumstances, be used satisfactorily for the production of pulp and paper.

The sub-committee feels that this is in part a problem for the industry itself to solve and yet it could work advantageously with saw mills and wood-using plants through the National Committee.

IV—Prevention of the decay of timber and pulpwood.

The sub-committee feels that the question of waste through decay is a question which is common to all of the wood-using industries. While unfavorable conditions for storage for pulpwood are known to be the cause of enormous losses, yet the difficulties now experienced in better storage and handling of wood makes the problem difficult of solution in the pulp and paper industry alone. In this question the Forest Products Laboratory at Madison has been doing excellent work but the results of their work could be made of greater value through wider application. The National Committee might well be of assistance both in furthering a study of the question and in the application of results in the industry.

V—Improvements in manufacturing technique.

Particularly in the production of chemical pulp, there is waste through failure of machinery to refine wood to proper point. This failure often causes a loss of wood material estimated conservatively at 5 per cent of the wood supplied to the grinders.

In the case of sulphite pulp, although laboratory results show a yield of 55 per cent from spruce wood, in the majority of mills the yield is less than 45 per cent of the weight of the wood.

The sub-committee feels that while this is largely a question for the industry itself to meet, the National Committee might be of assistance in the co-ordination of research within the industry and through governmental agencies.

VI—Re-use of paper—Saving waste paper saves wood.

While there is a possibility that a higher price for wood and for waste paper is the only way by which more of the waste paper would be collected and used, nevertheless there is great opportunity for progressive effort to insure a continuous outlet for waste paper at a stable price.

The sub-committee feels that as this is a question in which the public is vitally concerned, the National Committee might assist materially in educating both the public and the industry as to the benefit of saving wood through saving waste paper.

VII—Saving of wood through increased use of paper.

The increasing scarcity and cost of wood and increasing cost of transportation has brought into use fibre or container board and other products of pulp, direct and indirect. Any saving of wood through the use of fibre containers means the use of that wood for a product of higher value.

A recent study of the use of lumber for packing cases in the pulp and paper mills of New England showed the use of a surprising amount of spruce lumber in those mills which should be going into the mills in the form of pulpwood.

Any real and determined effort made for the saving of wood must be based upon the recognition of the economic factors involved. Therefore, the sub-committee feels that the National Committee could be of great assistance in harmonizing the interests of the producers of lumber and of fibre cases in such a way as to accomplish the most effective use of wood and therefore the saving of wood.

Formation of Carbon Dioxide in Sulphite Digestion

It is by no means new that carbon dioxide can be found in the waste gases that escape from the sulphite cellulose digester. This fact possesses particular significance in the recovery of the sulphurous gases and their reworking. Certain interesting results have been obtained along these lines by a Russian investigator, published originally in Bumashnaja Promueschliennostj and abstracted in Zellstoff und Papier, 1926, page 74.

It is known that during the course of the digestion, methanol, acetic acid as well as formic acid, furfurol and cymol are formed, which are all products which are ordinarily obtained in the dry distillation of wood. Carbon dioxide gas is also formed, being evolved in dry distillation at a temperature of 150 degrees C., and this gas is also formed at lower temperature under other conditions. If the oxymethyl groups of the lignin are converted into methanol during the sulphite digestion process in approximately the same degree as in the dry distillation process, it also follows that the possibility of carboxyl and carbonyl groups being similarly converted into carbon dioxide is not excluded.

Analysis of the gas that is derived from the digesters shows that the proportion of carbon dioxide will vary from 22 to 56 per cent and will be dependant on the temperature at which the sample of gas is taken. Sulphur dioxide and nitrogen are also contained in the gases but no oxygen. A small amount of another gas is mixed with the nitrogen.

The next conclusion of the experiments was that the formation of carbon dioxide increases with the temperature. A low digestion temperature possesses certain advantages, for the formation of carbon dioxide and its presence in the gases obtained from the digester entails certain difficulties in the reworking of these gases into sulphite liquor as well as certain losses of sulphur dioxide.

Usefulness of Fibrous Plants in Paper Industry

The Forest Products Laboratory receives frequent requests for information regarding the possible use of plant fibers, such as sugar cane (bagasse), corn stalks, bamboo, and the various straws and grasses, for pulp and paper manufacture. Its investigations of these materials have not been very extensive, but the indications are that the pulping of these fibers for print paper manufacture is not economical under present conditions in this country.

Unfortunately, none of the plant materials pulped were found very suitable for newsprint. Even when the groundwood pulp shortage becomes more acute and the price of pulpwood increases to the point where the fibrous plants can compete with spruce, balsam and hemlock, the newsprint market, which with the exception of paper board is the largest market in the paper industry, will probably not be opened to these materials. Some of the fibers can be pulped and made into fairly good grades of book, magazine, lithograph and writing papers which under favorable economic conditions can compete with papers made from the standard pulp materials. Practically the only use any of the fibrous plants find at the present time in the paper industry, however, is in the manufacture of corrugated board, the cheaper board products and specialties.

The chief difficulties standing in the way of the economic utilization of fibrous plants and waste crop products as pulp materials are the following: The cellulose suitable for pulp contained in such materials is usually in such small amounts or is so difficult to purify that the cost is prohibitive. Many of the plant stalks contain large percentages of pith. The pulp produced from them is weak and requires high chemical consumption. Because of the bulkiness of the raw material, the yield from a digester charge is small as compared to the yield for wood pulp. The difficulties of collection and the high costs of transportation limit the amount of material available. As most of the fibrous plants are seasonal crops, facilities must be provided for the storage of a large volume of stock in order to permit the paper mill to operate throughout the year. The susceptibility of the material to decay adds greatly to the costs and difficulies of storage. The fire hazard is also very great.

The New York Division of the Salesmen's Association of the Paper Industry had as its guest at an April weekly meeting George W. Sisson, Jr., president of the Racquette River Paper Company and former president of the American Paper and Pulp Association. Mr. Sisson spoke briefly of his interest in the Salesmen's Association and its possibilities for service to the industry as a whole.

News Briefs from Washington

Consular Reports

Italy Increases Tariff on Newsprint.—The Office of the Commercial Attache at Rome, Italy, reports that the Italian newsprint mills have been suffering for some time from competition from the Scandinavian countries and it has not been found practicable to assist by demanding a higher price for their product. This situation has been partially met by the imposition of an increased duty on newsprint beginning April 1, 1926, of 5 lire gold per metric ton superseding the previous duty of 2 lire. The Association of Paper Manufacturers has agreed, however, to keep down the price of newsprint, and the printing industry will not suffer through the higher duty. The Government has imposed the duty conditional upon the assumption by the paper industry of an obligation not to increase prices in the belief that the interests of both manufacturers and consumers are entitled to consideration and should be reconciled.

German Paper Consumers Organize.—The Commercial Attache's office at Berlin, Germany, states that German paper consumers have decided to found a new organization or central committee to take care of matters affecting all paper using industries. Printers, lithographers, typographers, newspaper and magazine publishers, art printers, book publishers, envelope makers, wrapping and polychrome manufacturers, novelty producers, and so on are all to be represented in the new organization. Special emphasis is laid on the fact that the new body is not to be an association or union with a large staff and heavy overhead, but a simple committee with a maximum of 36 members. This is done in order to avoid the charge of over-organization which, in the opinion of many observers, is one of the great curses of German postwar business. This "Spitzenausschuss" will not interfere in the affairs of individual cartels but will handle only such matters as relations with the Government and foreign policy. Its headquarters are to be in Berlin.

France Offers Trade Opportunity.—The American Commercial Attache at Paris, France, informs us that considerable interest has been expressed in receiving offers for American newsprint and that unless prices are too far out of line considerable sales could be made in France. While it is possible that the newsprint situation in the United States at the present time may not make the possibility of foreign sales very attractive, he believes that a market is available. In order to take any action in the matter, however, it is essential that price data and terms be at hand.

Poland Scarce on Foreign Writing.—Acting Commercial Attache Allen at Warsaw, Poland, states that there has recently developed a marked scarcity of foreign writing material in Poland, especially German and British stock. This has been attributed to the existing prohibition against German goods and the present currency depreciation. Foreign paper lying in wholesale warehouses has risen slightly in price, and consumers in general have been buying more domestic goods.

Mill Expansions in Sweden.—Commercial Attache Klath at Stockholm, Sweden, reports that the sulphate mill of Bergvik & Ala Nya Aktiebolag at Sandarna has recently been enlarged to a capacity of 20,000 tons of kraft pulp per year as against 15,000 tons previously. A further enlargement is planned to a capacity of 34,000 tons in the near future. This plan will be considered at a board meeting to be held in April. Aktiebolaget Scharins Soener also recently acquired land at the Ume River below Umea for the purpose of erecting a pulp mill with an annual output of 60,000 tons of mechanical groundwood. The construction of this new mill will be commenced this year. The Obbola sulphate mill belonging to the Holmsunds Aktiebolag is to be enlarged from its present capacity of 22,000 tons per year to a capacity of 33,000 tons, according to Commercial Attache Klath.

Finland's Record Production.—According to Assistant Trade Commissioner Kekich at Helsingfors, Finland, the member mills of the Finnish Cellulose Association, which controls over 90 per cent of the production of chemical pulp in Finland, produced a total of 367,114 tons of chemical pulp in 1925, the largest in the history of the industry in that country. During 1926 it is estimated that this figure will be increased by not less than 10 per cent. Several extensions and constructions are planned for increasing production in 1927, while two new mills, one with a capacity of 6,000 tons and another of 20,000 tons are to be erected this year. A belief that the present large lumber production of the country should be converted into pulp has been prevalent among certain business interests in Finland for some years and has been accentuated by relatively poor conditions in the lumber market during the same period.

Mr. Kekich states that among projects for the increase of Finnish pulp production there has recently been announced that A/B Kemi O/Y., of Kemi, Finland, will increase its sulphite pulp production from 30,000 to 38,000 metric tons per year and that this concern's board of directors has decided to build a new sulphate pulp plant of from 18,000 to 20,000 tons capacity. The new mill is to be located at Karihaara, but no date for the opening of building operations has been set. Elektrometallurgiska Aktiebolaget at Vuoksenniska has also decided to build a mechanical pulp mill at that point with an initial capacity of 7,000 tons, operations to be conducted under a separate company known as the Vuoksenniska Company. A/ Svarta Bruk O/Y also intends to modernize and enlarge its plant at Svarta increasing its mechanical pulp production from 5,000 tons to about 7,500 tons annually.

Persia to Build Paper Mill.—American Consul K. de G. MacVitty at Teherañ, Persia, reports that the Persian Government has decided to spend about $400,000 for the purchase and building of a paper mill to be operated in conjunction with the Government printing plant which was established last year. The plans include the manufacture of newsprint, book, writing, and other kinds of paper which have heretofore been imported at heavy cost to the Government. Recent experimentation has proved that satisfactory pulp can be made from Persian woods of domestic origin, and it is expected that locally produced raw materials will be used.

Germany Capturing Mexican Wrapping Trade.—Consul D. E. Dwyre at Guadalajara, Mexico, states that the sugar industry in the State of Jalisco offers a steady market for what is known as "sugar wrappings." Practically all of the sugar mills of this State turn out their sugar in cakes, each one being wrapped in paper, and the industry requires about 5,000 reams per annum. This wrapping paper has until recently been supplied almost entirely by American manufacturers, but German producers have lately taken the lead in this market and are supplying this paper at prices under those quoted by American mills.

Japan Shows Steady Production Gain.—The office of the Commercial Attache in Tokyo, Japan, reports that the paper produced by the member mills of the Japanese Paper Manufacturers' Association totaled 931,772,930 pounds, and sales, with the exclusion of cardboard, reached 898,602,037 pounds. Production for 1925 shows an increase of 13.9 per cent over 1924, the previous high year, while sales increased in 1925 by 11.6 per cent over 1924. It is estimated that with the new equipment in operation this year that production during the calendar year 1926 will be over 1,000,000,000 pounds. Comparative figures on production and sales during the past five years are given as follows:

Year	Prod.—lbs.	Sales—lbs.
1921	534,450,000	551,320,000
1922	629,343,000	637,569,000
1923	729,508,000	709,845,000
1924	817,383,000	804,810,000
1925	931,773,000	898,602,000

The above information is based on data obtained from the Tokyo Koshinjo (Credit Agency) for March 16, 1926.

Price Stabilization[1]

In the Container and Paperboard Industries

By GRAFTON WHITING

Paperboard Industries Association

IT IS said that the selling price of a fibre container is what you can get for it; that your competitors set the prices and costs have nothing to do with it. This may be a logical conclusion based on certain transactions but each manufacturer uses his independent judgment as to what he will or will not accept. If anyone consistently sells below cost, he will not long remain in business and each manufacturer must have a dead-line whether he calls it so or not, below which he loses

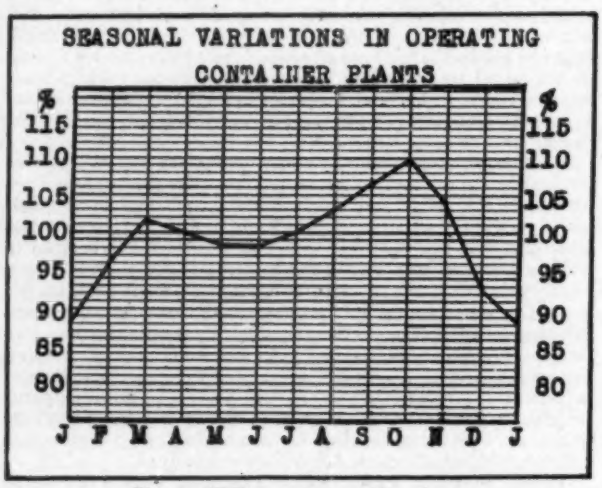


Fig. 1—100%—average running time

money and he cannot for any length of time be in ignorance of about where this dead-line is. The cost of the product is the dead-line and must be the final determining factor in selling price ranges. If it is the final factor, then it must be the current factor operating continuously as a basis upon which each must rely in determining the price for which he will dispose of his product. Certain conditions may arise that will seem to justify a figure below the dead-line, but these must seldom occur if capital is not to be seriously impaired.

Container Prices

Selling prices may be considered as being governed by three variants: profit, conversion costs, and board or material costs.

Profits vary with the character of the sale, the seasonal demand and the kind of service rendered. It is the one optional factor in a transaction and depends on general sales policy. Profit, although the important item, represents but a small proportion of the total.

Conversion costs vary with the volume of production, being less in times of full operation and more in slack periods. These variations, under modern accounting methods, are equalized through the cycle of a year in such a manner that they are well understood and under control. Unless controlled, conversion costs would dictate a higher cost in dull periods, and make sales more difficult. Conversion represents 25 to 30 per cent of total costs and is not the main factor.

Material costs vary with the market price for boxboard and as they represent 65 to 75 of total costs they are the principal factor. Selling prices follow boxboard prices but not in the close manner that is essenital in good merchandising. With a rising price of boxboard, box prices are sluggish and lag behind in a slow advance. Fabricators seem afraid to demand a just price and often quote figures based on a material cost at less than it can be purchased in the open market. Some even go so far as to advertise to their customers that board prices have advanced but they are willing to sell at the old level because they have some stock left on hand.

But what happens when boxboard prices go down? Almost at once box prices fall. No one states that he has board on hand at higher cost and must sell it before he can drop his box prices. To fail to take immediate advantage of rising prices and to drop precipitously with falling prices is certainly the poorest kind of merchandising.

The answer is that prices should be based strictly on replacement values. All container plants require a certain complement of stock on hand for economical operation. This is merely a reserve and might just as well be unpurchased board except for the necessity of having it close at hand. If all quotations were made on the basis that board must be purchased to fill the order, serious losses when board prices drop would be avoided.

There is a policy in the minds of some fabricators that by dropping the price they can increase the demand. This is true in many industries but not in boxmaking. Because a container is cheaper, no manufacturer is going to use more of them. His demand is governed by the number of articles he produces and the cost of the container is a negligible item of his cost and any saving he may make in lowering container costs is rarely passed on to stimulate retail buying. A lower price may induce advanced ordering, but here again buyers are inclined to hold off in a falling market for still lower levels.

Stabilization

Stabilization of price should be the aim of all container manufacturers. It is one of the first signs that an industry has found its level among the old and well established industries. From the buyer's point of view, prices that are fairly consistent, without wide and rapid fluctuations, establish confidence that his purchases today will not be badly out of line with those of next month or two months hence. He can safely estimate his container costs in his output and his future contracts. He can feel that his competitors are not going to have a marked advantage over him later on.

For the boxmakers, stabilized prices have a strong appeal. With a fairly level range of selling prices plans can be made for a considerable time in advance. Hand to mouth expediences give way to well thought out policies; operating volume can be better forecast, labor more steadily employed, equipment better balanced, confidence can be established in the

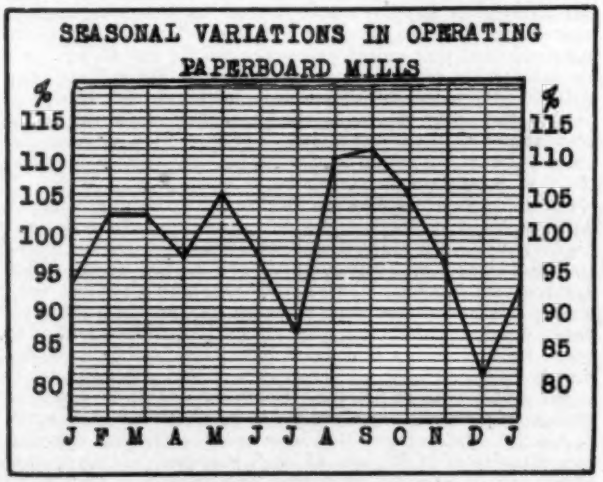


Fig. 2—100%—average running time

minds of buyers to place forward orders and give work for the dull periods. With fluctuations of 20 and 30 per cent as have been common, the buyer is disgusted. He thinks all box manufacturers are without business sense and refuses to trust them for anything beyond his immediate needs.

Procedure

Stabilization, like many other improvements, is a process of education. It is the schooling of individuals in an industry to see beyond their own small circle of trade and beyond the day to day transactions. The situation in one locality is

[1] Read at the meeting of Paperboard Industries Association, New York City, March 25, 1926.

affected by the conditions in another. The lifting of competition in one place by increased demand and by plants filled up with work is soon felt in all directions. If the container industry were not so seasonal in its operations, stabilization would be more easily accomplished, but a varying volume at different times of the year make control more difficult. Each container maker thinks he is specially privileged to maintain full activity in his plant regardless of the general demand. With a knowledge of the seasons and willingness to understand when they are approaching, it is only necessary to be governed by them to avoid cut-throat tactics and price slashing. If each recognized that there is only business enough to run 65 or 70 per cent of the time during the summer, for example, and would be satisfied with his complement of volume, there would not be the scramble for orders when business naturally becomes dull and prices would not be cut to the quick at a time when such profits as can be obtained are most needed. Price and volume seem inseparable in the minds of some people, but it is far better to do a little business at a profit than a large amount at cost or at a loss.

Costs

Equipment values in a container plant are not such a large item that partial idleness will quickly turn figures into the red because of operating loss.

The supply of heat and power and general upkeep is not as important an item in a fabricating plant as in a paper mill, so the urge for full time running to effect economy in operation does not have the significance in the former as in the latter.

Stabilization in container prices is dependent upon stabilization in boxboard, the largest factor in costs. With boxboard fluctuating within narrow ranges and confidence established in the mill operators, real progress will be made.

Economical mill operation requires steady running. With the machine hour cost on the paper machine alone ranging from $50 to $80 per hour, shut-down for lack of orders mounts quickly into a considerable loss. All such losses must be included in the average selling price and in times of peak demand prices go up to offset the slack periods with their shut-down loss and their low price ranges. If sufficient equipment must be maintained to satisfy a severe peak load then there will be more standing idle during low demand.

Co-operation

Container manufacturing can govern these conditions to a considerable extent and it is to their advantage from a selfish standpoint to do so. By co-operating more closely with the mills by forecasting their requirement, by evening out their specifications for delivery, much can be done to reduce shut-down losses and by so much will stabilization in board prices be gained.

Much has been said about mills with fabricating plants cutting prices during slack periods, but with a heavy shut-down loss ahead and container plants holding off on boxboard orders, it is only natural that effort be made to bring in enough business to continue operating. In this same period of low demand each box plant feels entitled to take any kind of an order wherever it can be found, regardless of its ability to produce it economically; and the only sales argument used in price. With eight or ten salesmen to every buyer, stabilization is the last thing thought of.

A large box manufacturer recently decided that he had had enough of large volume business with little or no profit and beginning with January 1st, would accept only such orders as showed a just profit. The result was a reduction in volume as was to be expected, but his firm stand on price brought him a substantial increase in net profits.

How Accomplished

If stabilization is to be accomplished, it must be started at the bottom and worked for from the mills through to the sales of finished containers. Both fabricating mills and independent plants must adhere to replacement market values on all board figured in estimating, and forward planning must be done to equalize the demand on the mills. Sales effort must be confined to the character of product the plant is equipped to manufacture economically and periods of lessened demand must be met with determination to seek only a just proportion of the business offered. The argument of cheap prices must give way to the statement that fibre containers are priced with a reasonable margin of profit and render a service better and at less cost than any other kind of container that can be bought.

The Coming Sesqui-Centennial

Philadelphia International Exposition Will Have Interesting Paper Exhibit

THE Paper Exhibit at the Sesqui-Centennial International Exposition, Philadelphia, Pa., June 1 to December 1, 1926, promises to be one of the most interesting of its kind ever attempted. The Philadelphia Trade Paper Association has laid extensive plans for an exhibit covering paper and papermaking from its earliest stages to modern methods of large scale machine production.

One of the main features of the display will be a reproduction of the Rittenhouse mill, the first paper mill in America, erected in Germantown, Pa., in 1690. Visitors to the exhibit will be informed of the mill's history, and be shown copies of correspondence which will give an idea of the amount and nature of the business transacted at that time. Hand-made paper, perhaps with the old Rittenhouse watermarks, will actually be produced in the mill.

Specimens of the earliest forms of paper, nature-made paper, such as that formed in streams and ponds, will be on view. It will also be an interesting comparison for visitors to make, to compare man's first crude attempts at papermaking, such as papyrus, tapa, and the so-called rice paper, with sheets made in modern mills by modern methods.

Another of the interesting features of the exhibit will be Reamur's essay on wasp-made paper. This was written in 1719 and was the first recorded suggestion of the use of wood as a papermaking material. And in conjunction with this, Benjamin Franklin's essay suggesting the making of paper in long sheets after the Chinese fashion. Franklin's treatise is of especial interest as it was immediately afterward that the paper machine, which was to produce paper in an endless web and which effected a revolution in printing, was invented by Nicolas Louis Robert.

Many visitors will be attracted to that part of the exhibit displaying some of the other bits of historical material in connection with the early stages of papermaking—a book printed on the first machine-made paper made in America, the history and specimens of the first straw and wood papers, and odds and ends and bits of historical material dealing with the progress of the industry.

There will be a comprehensive display of watermarks, from the primitive to the elaborate modern portrait marks struck off to commemorate great events. There will also be a complete library of the literature of papermaking, comprised of old and rare text books and modern government publications and files of trade papers.

The "movie" lover will feel right at home at the Exposition, as it is planned to have motion pictures depicting the complete process of papermaking, beginning with the logging operations and ending with the delivery of the printed product. The pictures will be presented in an interesting manner, well calculated to hold popular attention.

The Bureau of Standards at Washington and the Forest Products Laboratory, U. S. Department of Agriculture, Forest Service, will come in for quite a display. Pamphlets of the work done and speciments of experimental papers will be available.

These are only the high lights of the Paper Exhibit. Many others, too numerous to mention here, are planned. Throughout the entire exhibit, however, one main idea prevails; namely, to make the exhibit as simple and inclusive as possible, so that the average layman will leave the Exposition with a new knowledge of papermaking and a new realization of the importance of paper in his everyday and business life.

Hall-Will, Inc., is the name of a newly organized firm of manufacturers of pipe, bolt, and nipple threading machines, located at Erie, Pa. The concern is headed by Leslie Hall, formerly of the Williams Tool Corp., Erie, Pa. C. Frank Williams is vice-president, and Harry W. Sims, secretary and treasurer. Complete production is planned for June 1.

Notes on Kraft Pulp and Paper Manufacture

Cooking Processes, Recovery Systems, and Beating Methods Described

ON THE subject of kraft pulp and paper, Dr. Arthur St. Klein contributes to **Zellstoff und Papier** (No. 3, 1926, pp. 114-118), an interesting article outlining the operative procedures generally employed.

The general scheme of operations in a sulphate mill is represented in the accompanying diagram, Fig. 1; the arrows show the entry or exit of stock, heat, etc. The wood is generally prepared as in a sulphite mill, but the chips should

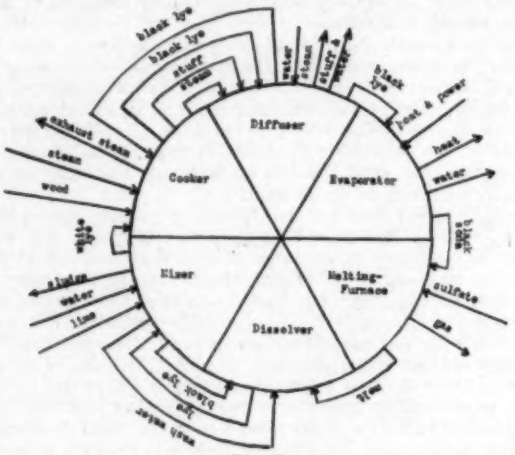


Fig. 1

not be cut too small, otherwise the fibers will be unnecessarily shortened. At the same time, the chips must not be too coarse for good penetration and thorough disintegration by the lye. The length of the chips may range between ¾ and 1½ inches, depending on the structure of the wood, the time of cooking, and the type of digester used.

The digesters are made of wrought iron, and in recent times are almost exclusively welded. In general, the size ranges between 30 and 40 cubic meters, but digestors of 70 or more cubic meters are in use, and there are apparently no good reasons why the capacity may not extend up to 100 cubic meters. For cooking with agitation, however, great height of the digester is an inconvenience, and so in the case of big digesters only the upright form is employed. In recent times the upright digester has been returning to favor, along with the indirect cooking process, in which the liquor is heated outside the digester.

An advantage of the digester which can be periodically agitated is that the wood is not completely covered by the liquor; the chips which during the rotation have soaked up liquor, and which, during further progress of the cooking while the mass is at rest, are subjected in a certain sense to a process of steaming while lying above the level of the liquor, yield a fibre which is more silky and better appearing. The similarity with the mercerizing of cotton is striking.

A characteristic difference between cooking with sulphite and with soda is that soda liquor wets the wood better than sulphite liquor, so that the "coffee beans" observed in the sulphite process when the wood is not covered by the liquor do not occur in the soda process.

The strength of the liquor used in cooking is variable because the final result depends on the one hand on the strength and amount of the liquor and on the other hand upon the time of digestion and the temperature, which has a direct bearing on the cooking pressure. The most suitable time and temperature of cooking for making fibre of a predtermined character from the available wood should be determined practically. For example, caustic soda lye of 12 degrees to 14 degrees Bé. is used with a time of cooking at 4¼ hours, about half of which is under pressure at 8½ to 9 atmospheres, corresponding to 170 degrees to 175 degrees C.

The chief constituent of the liquor is caustic soda, besides soda, and silicate are present. The ratio of effective sulphate, soda, and silicate are present. The ratio of effective sulphur compounds to sodium hydroxide is about 1 to 2 or 3. Different cooking liquors were found to have the following compositions:

	Grams per liter = kg. per cubic meter			
Sodium hydroxide, NaOH.....	61.32	55.0	60.2	53.0
Sodium sulphide, Na_2S.....	21.55	30.0	26.8	25.8
Sodium sulphite, Na_2SO_3.....	2.40	3.0	2.8	....
Sodium carbonate, Na_2CO_3.....	14.73	15.0	15.3	25.8
Sodium sulphate, Na_2SO_4.....	3.66	5.0	3.2	3.7

The last two analyses are given by Heijne. As the author has shown, in another connection, there is required for the disintegration of wood from 16 to 18 kg. of alkali, figured on the dry weight of the wood. Of all the substances which take part in the process, the most active is the sodium hydroxide, which initiates the hydrolysis of the lignin and the other organic compounds. The work of disintegration is carried forward by the sulphide; according to the explanation given oy Klason the methoxyl groups of the lignin react with the sulphide to form dimethyl sulphide and then by hydrolysis are transformed into mercaptan, methyl alcohol, and a sodium phenolate. According to Hawley, pine wood contains 5.3 per cent of methoxyl, from which the consumption of sodium sulphide figures out 6.6 kg. per 100 kg. of dry wood (1 methoxyl to 1 sodium sulphide). This calculation agrees tolerably well with the actual consumption figures, as may be calculated from the analyses of the liquor.

The question of whether unaltered sodium carbonate and sodium sulphate take part in the process of disintegrating has not been answered with certainty. The author is still inclined to his previously expressed opinion that the content of sodium sulphate and sodium carbonate, by increasing the osmotic pressure, increases the penetrating power of the liquor, and in this way they promote the effectiveness of the really active alkali compounds.

Besides the white liquor there is also added the so-called black liquor, which is waste liquor from a previous operation. From various quarters has come the suggestion that the black liquor is to a certain degree a diluent of the fresh liquor, but the author has found by parallel cooks that the same quantity of fresh liquor, without black liquor, gives a somewhat weaker fibre than when black liquor is added, although the total active alkali in both cases was about the same. This suggests the explanation—although the author declines to vouch for its absolute correctness—that in some way or another the black liquor acts protectively on the strength of the

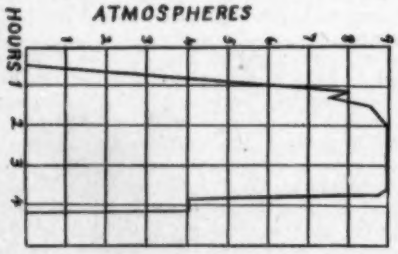


Fig. 2

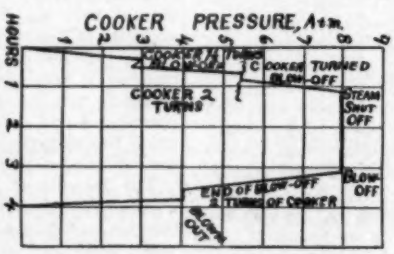


Fig. 3

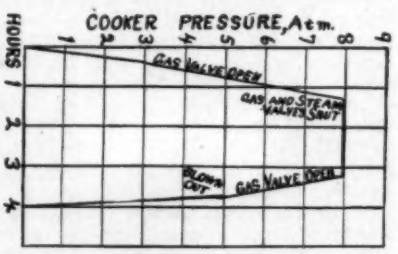


Fig. 4

fibre during the cooking process. The amount of black liquor that is added in digesters is not greater than about a fourth of the total volume, while in the case of vertical cookers the quantity of black liquor added may amount to half the total volume.

Methods of Cooking

Figures 2 to 4 show the method of conducting the cooks. Figure 2 represents the cooking process in a mill employing revolving digesters of 30 cubic meters capacity. The filling of the digester with wood and liquor requires half an hour. Steam is let in to bring the pressure in 15 minutes to 2 atmospheres; 30 minutes later the pressure rises to 8 atmospheres. The maximum pressure of 9 atmospheres is reached in two hours after filling is begun. This maximum pressure is maintained for 1½ hours, after which it is decreased. The period of cooking covers a total time of 4 hours and 10 minutes from the time when filling is begun to the blow-off. During the 30 minutes occupied by the filling process the digester revolves about ten minutes, each revolution requiring about 1½ to 2 minutes. When the digester has been filled with liquor and wood steaming is begun, the gas valve is left open for about half an hour so that air may escape. When the pressure has risen to 8 atmospheres, the digester is again kept in motion for 15 minutes. This causes the pressure first to fall to 7½ atmospheres and then to rise again to about 8½ atmospheres. When the pressure has attained this value the steam is shut off, but within 30 minutes the pressure rises of itself to 9 atmospheres. This pressure is maintained for about 1½ hours; the digester is again revolved for 5 minutes, and after 20 minutes the pressure is reduced by blowing-off down to about 4 atmospheres. During this first blow-off a sample of the stuff is taken and the digester again rotated for about 10 minutes. If the sample shows the stuff to be right, the cook is regarded as finished; blowing the stuff and the liquor into the diffusers requires another 10 minutes. Figure 3 (after Heijne) shows a diagram of the cooking in a revolving digester and Figure 4 the cooking in a stationary digester with direct heating. All essential particulars are shown on the diagram. Steam consumption in the production of sulphate pulp according to various systems is shown in Figure 5 and Table 1.

Table 1

Produced:		
	2,960 kg.	steam in boiler house
	2,260 kg.	steam from boiler in soda house
Total	5,220 kg.	
Consumed:		
	2,300 kg.	in the cooking
	220 kg.	in the mixer
	1,810 kg.	in drying
	400 kg.	in evaporating (1470—1070=400 kg.)
	490 kg.	lost
Total	5,220 kg.	

The coal consumption at the boilers is 493 kg., to which is to be added about 120 kg. for lime burning.

In Fig. 5, A, B, and C represent evaporators with foam catchers.

The author sketches the recovery process introduced by H. K. Moore in the La Tuque mill of the Brown Corporation. In this process, the black liquor is evaporated in multiple-effect evaporators to 50 per cent dry substance content. Salt cake is mixed in and the resulting thick mass is atomized and burned. Heat must be added from the outside in order to keep the process going; the best fuel for this purpose is producer gas, which acts reducingly on the sulphate. The waste gases pass under the boilers and make their exit with a temperature of at most 500° F. In this way 2,748 B. t. u. are recovered from each pound of dry matter.

In general, it may be reckoned that to make one pound of fibre, including drying, there are required 6 pounds of steam. However, the consumption of fresh steam that has to be raised by extra fuel amounts to not more than one-fourth of the total requirement, the other three-fourths being, with suitable equipment, recovered from the soda house and the evaporators.

Consumption of Alkali.

The consumption of alkali may vary greatly, according to the equipment. Some mills may manage very well with 15 per cent of sulphite to replace wasted salts, while other mills consume 25 per cent or more. Sieber has calculated that 0.6 to 0.8 per cent of the sulphate is lost by leakage; about 0.5 per cent in the by-products department, where turpentine oil, etc., are recovered; and in washing about 0.5 per cent, if the displacement is good. These figures to a large extent represent an ideal which is only occasionally reached in practice. The author's experience has been that loss from leaks in the mill amount to 1 to 2 per cent; losses in the diffuser, 8 to 12 per cent, depending on the hardness of the fibre; losses in causticizing, 1 per cent; losses in dissolving the recovered salts, ½ per cent; losses in the waste gases from the recovery furnace, up to 3 per cent; and in waste from turpentine recovery, etc., about 1 per cent.

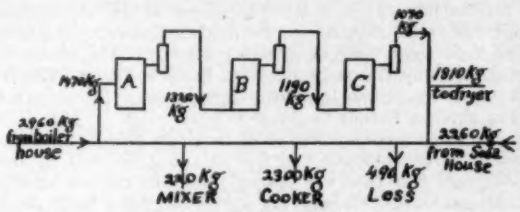


Fig. 5

On the other hand Griffin has reached the conclusion that the losses in washing amount to at least 2 or 3 per cent, that causticizing and extraction of the recovered salts cause a loss of about 1 per cent, and that the chimney losses amount to 2 or 3 per cent. Griffin's figures, however, relate to soft-cooked soda cellulose.

In these calculations the ash content of the pulp is figured in with the calculation of loss in the diffusers.

The average water consumption in the manufacture of kraft pulp is about 250 liters per kilogram, or 31 galls to the pound.

The consumption of wood depends very much on the method of cooking, the strength of the pulp and also on the kind of wood. Under favorable conditions one can reckon on 100 kg. cellulose from 0.44 solid cubic meter of wood.

The power requirement depends very much on what sort of conveying arrangements and evaporating equipment are available. Usual mill figures run from 180 to 300 kw. hours per ton.

Beating and Papermaking Processes

It is of advantage to work up the pulp in the undried condition, as thereby a stronger paper is obtained. For this reason, many mills which manufacture kraft pulp for sale deliver it, not in the dry condition, but with about 80 to 82 per cent absolute dry substance. A definitely proven explanation of why cellulose loses strength on drying, or why paper made from dry pulp is weaker, has not been forthcoming. The author's opinion is that on drying, the fibres shrink up, and that in the further stages of the process of papermaking the hydration (water absorption) of the fibres is incomplete, because the mechanical operations proceed too fast. In this connection reference is made to the fact that finished groundwood, if left standing over Sunday in the tanks, is found to be more "slimy," and the explanation suggests itself that during this period of standing, the water has a better opportunity to penetrate and fill the interior canals of the individual fibres, causing them to swell, the result being a larger surface. To this larger surface the water adheres better, and on the machine wire the stuff has a slimier behavior than at the week-end before the Sunday shut-down.

In general, a distinction can be made between two processes used at the present time in the manufacture of kraft paper. The first process is based on the use of beaten sulphate pulp which is very carefully ground in the beaters in such a man-

ner that the fibers are shortened as little as possible, at the same time attaining a satisfactory degree of smeariness. The division (shortening) of the fibre is subsequently accomplished in Jordans immediately in front of the paper machine.

During the beating the fibres are mashed and the double walled wood-cells pressed together. This double pressing together of the cell walls increases the strength of the paper. The working scheme of a mill which follows this process very conservatively is about as follows: The stuff is ground in old beaters with rolls of 1,200 mm. diameter and breadth of 1,060 mm. The kniving consists of 82 steel knives, 8 mm. thick; triple base section of six knives each, set at an angle of about 26° and 4 or 5 mm. thick; below is a 12-knife beater section with knives 3 mm. thick. The swell reaches up to the middle line of the roll. The speed of the circumference of the roll is 7.6 meters per second, stuff density 5 per cent, gluing 1 per cent, time of grinding 3 hours. The beater work is controlled by the sedimentation tester. Other mills work with stone or bronze grinding equipment. Stone grinding always gives a harder paper.

In the other process, the stuff is given only a preliminary grinding in the beaters and the grinding finished in Jordan engines. In this case the beater functions merely as a good mixing machine, while the big and powerfully built Jordans, in which the knives are arranged in groups, accomplish the main part of the work. The paper prepared by this second process has good strength, but is less porous and has a poorer and harder feel than paper made by the first process. Mills which work by the second process are found partly in Scandinavia but chiefly in America. The stuff is worked either on self-feeding machines or on open machines. The Americans have attained the best results in paper machine work, so far as high production is concerned. Heijne states that he has observed a speed of 260 meters a minute in an American paper machine, making 46-gram kraft paper and that 300 meters a minute has been reached on the same machine. This machine has a slightly inclined wire, and the on-flow is so regulated that the velocity of the stock approximates that of the wire; this results in good formation and the wire capacity is well utilized. This machine has no suction press roll, but has a suction couch and in the single wet press the lower roll is also a suction roll. The upper press roll of the wet press carries a felt which is provided with a rotating suction felt and automatically carries the paper into the dryers. The dry substance content of the paper sheet going to the dryers is 68 per cent. The paper machine is equipped with 8 revolving knot catchers.

The drying system consists of 16 cylinders each having a diameter of 1.6 meter. The stock is delivered to the machine by two large mixing beaters and three big Jordans; two of these Jordans are each driven by a 350 h. p. motor and the other by a 250 h. p. motor.

Simonds' Fifth Essay Contest

Mr. Alvan T. Simonds of Fitchburg, Mass., announces the fifth of a series of annual essay contests on economics.

The topic for 1926 is, "Saving and Spending as Factors in Prosperity—with Special Reference to the Effect of Simplified Practice and the Elimination of Waste on the Standards of Living."

The essays are to be in two parts: the first, theoretical, dealing with the economic theory of Saving and Spending and setting up a thesis fitted to present conditions in the United States; the second, applied and illustrating by Simplified Practice and the Elimination of Waste the thesis developed in Part 1. The parts must be so written that either part may be used as an independent unit. The essays should be written to interest the average person as well as the technical.

The first prize will be $1,000, and will be awarded for the best essay submitted consisting of the two parts. Two second prizes of $250 each will be awarded for the two best essays submitted dealing with each separate part. The contest is open to "everybody, everywhere," Mr. Simonds states, and will close December 31, 1926. The judges will be selected from experts in economics, business, and related activities.

Further information can be obtained by writing the Contest Editor, 470 Main St., Fitchburg, Mass.

Standards for Paper Testing

Proposed by the Technical Association of the Pulp and Paper Industry

SOME of the standard methods for testing paper and pulp as proposed by the Technical Association of the Pulp and Paper Industry and now under consideration by the members are stated as follows:

Method of Sampling Paper for Testing

I. **Test Sample.**—The test sample, unless otherwise specified, shall consist of sheets at least 11x11 inches in size, and having a total area of not less than 1,500 square inches. The sample sheets shall be kept flat, free from wrinkles and folds, and protected from exposure to liquids, direct sunlight and other harmful influences.

II. **Methods of Sampling.**—Not less than 10 per cent of the total units composing a lot of paper shall be sampled if the lot consists of not more than 100 units. If the lot consists of more than 100 units, not less than 5 per cent of the total number of units shall be sampled.

The samples shall be taken as follows:

1. From rolls.—The sample sheets shall be taken from the first unharmed layer of each roll.

2. From cases, frames and bundles.—The sample sheets shall be taken from the top and center of each case, frame or bundle sampled.

III. **Resampling.**—In case of necessity for resampling a lot of paper, the samples shall be taken as described above, except that the sample sheets shall be taken from different units than those previously sampled. If the identity of the original units is lost, and the paper is not in rolls, cases, frames, or bundles, the whole lot shall be so sampled that all the different components of it will be represented by the test sample.

Determining the Tensile Breaking Strength of Paper

Apparatus.—The instrument shall consist of (1) two clamps whose centers shall be in the same plane parallel with the direction of motion of the stressing clamp and so aligned that they will hold the test specimens wholly in one plane; (2) a pendulum so attached to one clamp as to accurately balance the load applied to the test specimen; (3) a device attached to the pendulum to indicate on a graduated scale the breaking load of the test specimen; (4) a scale graduated in metric weight units which may be read to an accuracy of not less than 0.2 per cent of the total reading, and (5) a means of moving the stressing clamp at a uniform rate. The machine shall preferably be power driven.

Specimens.—Specimens for test shall be cut accurately in each machine direction of the paper, not less than 12.7 mm. (0.5 inch) nor more than 25.4 mm. (1 inch) wide, and not less than 140 mm. (5.5 inches) in length. The edges of the specimens must be clean cut and parallel to the opposite edges. The specimens must be accurately cut to the predetermined width. They shall be so selected from the sample secured by the official sampling method as to be representative of the sample.

Method.—The ratio of the clearance distance between jaws to the width of the specimen shall be not less than 5:1, nor more than 10:1. The test specimen shall be firmly clamped at right angles to the jaws of the clamps and the stressing jaw then operated at a speed of 30.5 cm. (12 inches) per minute until the specimen breaks. The breaking load shall be recorded to the nearest 1/10 of the total reading. The tester shall be of such capacity that the tensile strength of the paper tested will be not greater than 90 per cent, nor less than 10 per cent of the capacity of the tester. Not less than 10 strips cut in each machine direction of the paper shall be tested. All the readings obtained when the paper breaks at or in the jaws shall be rejected. Tensile strength tests shall be made on paper conditioned according to the official method for conditioning, and in the atmospheric conditions therein specified.

Calibration.—The tensile strength tester shall be calibrated by suspending weights from the clamp attached to the pendulum and noting the corresponding readings on the scale. The

load shall be applied at the rate specified in the test method and other conditions must simulate the paper testing conditions as closely as possible. A record shall be made of deviations from the scale readings and corresponding corrections shall be made in test results. Calibration shall be made at intervals of not more than thirty days.

Report.—The results shall be reported in kilograms to the nearest 1/10 of the total reading. The average, maximum and minimum tensile strength for both of the machine directions of the paper shall be reported. The report shall include the width of the specimen in centimeters.

Determining the Bursting Strength of Paper

Apparatus.—The testing instrument shall consist of (1) a circular aperture of 31 mm. (1.24 in.) in diameter in a plane surface, the aperture registering exactly with a similar aperture in a second plane surface. One aperture shall communicate with a hydraulic chamber and the other shall be movable along the axis passing through the centers of the two apertures; (2) means of firmly clamping the two plane surfaces together. The clamping pressure and the extent of the contacting plane surfaces shall be such that there shall occur no slipping or creeping during the test of a specimen clamped between the plane surfaces and no injury to the specimen so clamped; (3) a rubber diaphragm firmly secured to the inner side of the aperture in the hydraulic chamber so as to close it off and expand through it when hydraulic pressure is applied; (4) by means of applying hydraulic pressure through a noncompressible fluid to the rubber diaphragm; (5) means of accurately and continuously registering the pressure maintained in the hydraulic chamber, the bourdon pressure gauge being preferred.

Specimen.—Specimens for test shall be so selected from a sample secured by the official sampling method as to be representative of the sample.

Method.—The specimen shall be firmly clamped in position and pressure applied within the hydraulic chamber at a uniform rate such that the noncompressible fluid shall be displaced against the rubber diaphragm and through the aperture at a rate of 75 cubic centimeters per minute until the paper bursts. (The rate is equivalent to turning the hand wheel of the ordinary type of bursting strength paper tester at a rate of 120 r.p.m. The gauge used must be such that the bursting strength of the paper tested will not be greater than three-fourths of its capacity, nor less than one-quarter of its capacity. The gauge reading shall be recorded to the nearest 1 per cent of the total reading. At least 10 bursts shall be made, each on a different specimen of the sample and an equal number from each side of the specimen. Bursting strength tests shall be made on specimens conditioned according to the official method for conditioning, and in the atmospheric conditions therein specified.

Calibration.—The instrument shall be calibrated at intervals of not more than thirty days. The calibrations shall be performed as follows: The gauge shall be removed and calibrated in a horizontal position with a deadweight gauge tester. A record shall be kept of any deviations from the indicated readings and corresponding corrections made in test results secured with the gauge. The gauge shall be replaced and the pressure chamber refilled with sufficient glycerin to leave the rubber diaphragm, when placed in position, slightly depressed, taking care to eliminate all air bubbles. The rubber diaphragm shall be renewed at least every thirty days.

Report.—The report shall include the average, the minimum and maximum test results. The readings of the gauges shall be reported to the nearest 1 per cent of the total reading and shall be expressed as "points."

Determination of Casein Coating

Apparatus.—No special apparatus is required for this determination.

Specimen.—The specimen for test shall consist of a piece of the sample cut exactly 2x5 inches.

Method.—Obtain the air-dry weight of the specimen. Place the specimen in a flat-bottomed tray and pour over it a warm 5 per cent solution of hydrochloric acid. After a few moments, pour off the excess acid and add a warm 5 per cent solution of ammonia, moving the paper around so that the solution comes in contact with all parts of it. After this treatment has continued for a few minutes, place the paper on a pane of glass and brush off the coating with a camel's-hair brush, taking care not to dislodge any of the paper fibre. After the coating is entirely removed, stand the glass pane at a slight angle and wash the paper by means of a wash bottle, holding the paper on the glass by one corner. Dry the specimen and obtain the bone-dry weight. The difference between this weight and the original weight of the specimen is the amount of coating material present. Not less than two determinations shall be made, and the average of these computed.

Report.—The amount of casein coating shall be reported (1) as a percentage of the basic air-dry paper and, (2) as pounds per 500 sheets of the basic air-dry paper, 25x40 inches in size. The weight of the air-dry paper on this same basis shall also be included in the report.

Determination of Resin in Paper

Apparatus.—A suitable extraction apparatus such as the Soxhlet or the Underwriter's is especially required for this determination. In addition, if glue or other nitrogenous sizing agents are present, two 300 cc. separatory funnels are necessary.

Specimen.—The test specimen shall consist of not less than 5 grams of paper obtained by cutting strips approximately half an inch wide from the sample in such a way as to be representative of it.

Method.—Obtain the air-dry weight of the specimen. Fold the strips into numerous crosswise folds and place them in the siphon cup of the extractor. Extract with acidulated alcohol (95 per cent alcohol—90 per cent, glacial acetic acid—9.5 per cent, water—0.5 per cent by volume), siphoning at last 12 times or as many more as may be necessary until the solvent siphons over colorless. If nitrogenous sizing agents are present, they must be separated from the resin as follows, this not being necessary in absence of such materials: wash the alcoholic extract of rosin, which may contain foreign material, into a beaker and evaporate to a few cc. on a steam bath. Cool, take up in about 25 cc. of ether, transfer to a 300 cc. separatory funnel containing about 150 cc. of distilled water to which has been added a small quanity of sodium chloride to prevent emulsification, shake thoroughly and allow to separate. Draw off the water into a second separatory funnel and repeat the treatment with a fresh 25 cc. portion of ether. Combine the ether extracts which contain the rosin and any other ether-soluble material and wash twice or until the ether layer is perfectly clear and the line between the ether and the water is sharp and distinct, with 100 cc. portions of distilled water to remove salts and foreign matter. Should glue, which is extracted from the paper by alcohol, interfere by emulsifying with the ether, it may be readily removed by adding a strong solution of sodium chloride to the combined ether extracts. Shake thoroughly and draw it off, repeating if necessary before washing with distilled water. Transfer the alcoholic or the ether extract to a weighed evaporating dish, evaporate to dryness, dry the residue exactly 1 hour at 100 degrees C., and weigh to an accuracy of 0.1 milligram. Not less than two determinations shall be made, and the average of the results computed.

Report.—The resin content shall be expressed as a percentage of the air-dry paper, to the nearest 0.1 per cent.

Determination of Paraffin in Paper

Apparatus.—A suitable extraction apparatus such as the Soxhlet or the Underwriter's is required for this determination.

Specimen.—The test specimen shall consist of not less than 1 gram of paper obtained by cutting strips approximately half an inch wide from the sample in such a way as to be representative of it.

Method.—Weigh the air-dry paper to 0.1 milligram. Fold the strips into numerous crosswise folds, and place them in the siphon cup of the extractor. Extract with carbon tetrachloride at least five times and as many more times as necessary until the solvent siphons over-clear. Remove the paper and determine its bone-dry weight as described in the official

method for determination of moisture. The difference between the original weight of the paper and its weight after extraction shall be regarded as the amount of paraffin present.

(Note—This is not exactly correct as resin or other materials may be extracted and the original moisture in the paper is included as paraffin. Not less than two determinations shall be made and the average content of paraffin computed.)

Report.—The paraffin content shall be expressed as a percentage of the air-dry paper to the nearest 0.1 per cent.

Salesmen and Trade Papers

Editor Keenan Addresses New York Division of Salesmen's Association

PAPER manufacturers' representatives in the metropolitan district, who are organized as the New York chapter of the Salesmen's Association of the Paper Industry, meet regularly once a week on Mondays at the Town Hall Club for luncheon and the discussion of trade conditions. It is the custom to invite a specialist in one branch or another of the industry to make an address on these occasions. At the luncheon meeting held Monday, April 19, Thomas J. Keenan, associate editor of THE PAPER INDUSTRY, was present and discussed the "Relation of Paper Salesmen to Journals of the Industry."

Dr. Hugh P. Baker presided in the absence of Charles Nickenig, who had been unexpectedly called to Washington.

In opening the discussion, Mr. Keenan spoke of the value of luncheon meetings for establishing contacts and acknowledged that it was by dining and talking with men in the field that editors of trade papers were best enabled to learn what is going on in the industry.

In reference to the topic assigned to him, he said that a truly alert paper salesman did not need to be told that the reading of trade journals was a matter of necessity. It was impossible to keep informed on the progress of the industry or abreast of developments in its different branches without regular and careful reading of the journals that represent the interests of the trade. "The man who becomes a subscriber and reads the trade papers diligently generally knows more on the little minor points that keep cropping up in his contact with prospective customers than the one who neglects to do so. Some of these points may be unimportant, but in each one the fact of ignorance or knowledge is apt to weaken or strengthen a salesman's position in the eyes of the buyer."

Mr. Keenan said that special knowledge on certain subjects connected with the manufacture of pulp and paper could be acquired by the salesmen who got the habit of reading the educational journals of the trade, of which THE PAPER INDUSTRY was the leader, being a purely educational journal always filled with informative articles on processes and methods, as well as equipment.

As evidencing the value of circulating freely among those engaged in the same kind of work through attendance on association meetings, Mr. Keenan instanced a discussion which he had heard recently at a meeting of mill superintendents, where the subject of pulps suitable for blotting paper was the topic. Putting himself in the position of a blotting paper salesman, he considered how helpful it would be if he could explain how his brand of blotting paper owed its superiority to a peculiarity of the pulp used in its manufacture and in other ways exhibit knowledge of papermaking operations. Discussions of this kind are frequently reported in the educational journals of the industry which not only supply valuable information and advice of a technical character, but also survey the entire field of business and interpret the events of importance in the industry which they represent.

In touching on the psychology of salesmanship, he remarked that this was a term which had been much overworked, though it was true that the art of a good salesman was an intangible thing, the methods of approach and subsequent handling of a "prospect" being as a rule too intricate to be precisely formulated. In approaching a customer, a salesman draws unconsciously from many data, but he would be hopelessly impeded if he attempted to make a scheme of his selling methods. The most successful salesmen were those who read their trade papers, attended meetings and circulated freely among those engaged in the same kind of work.

Position of Swedish Pulp

At the weekly luncheon meeting of the Salesmen's Association of the Paper Industry in New York on May 3, Gustav Asplund, from the office of the Swedish Consulate General in New York, gave an admirable analysis of the present pulp situation. The year opened strong with more pulp sold ahead than in any previous year, 45 per cent of 1926 Swedish bleached sulphite production having been sold January 1. Total sales of bleached sulphite for three Scandinavian countries sold up to 59 per cent on January 1. Canada, 26 per cent. To state it differently, on or about January 1, the three Scandinavian countries had sold 248,000 long tons of bleached sulphite, with 107,000 long tons purchased by the United States.

Bleached sulphite for rayon has promise of overproduction. In 1925 there were about 52,000,000 pounds of rayon produced in the United States, using approximately 40,000,000 tons of bleached sulphite, whereas the world production of rayon in 1925 was about 130,000,000 pounds, and for 1926, estimated at 162,000,000 pounds. It is figured that there may be available in 1926, 150,000 tons of bleached sulphite for rayon, which is apparently much more than will be used.

Unbleached sulphite was said to be in better position. The estimated production for 1926 in long tons was stated as follows:

Sweden, 702,400; Norway, 138,400; Finland, 207,400; Canada, 201,300.

On January 1 there was sold ahead unbleached sulphite in the following quantities from the countries named:

Sweden, 516,000; Norway, 66,000; Finland, 162,000; Canada, 105,800, long tons being understood. The foregoing represents a total sold ahead of 851,000 long tons or 68 per cent production. On April 1, for the same countries, there was sold ahead 83 per cent of 1926 production.

There is a most interesting situation in the sale of Scandinavian pulp for 1927, it being estimated that Sweden has sold unbleached sulphite ahead for 1927 up to 32 per cent of tonnage available; Norway, 25 per cent; Finland, 25 per cent.

Of unbleached sulphate it is estimated that in 1926 there will be produced in Sweden, 303,500; Norway, 231,000; Finland, 68,700, and Canada, 74,300 long tons. In view of the foregoing it is of interest to note that on January 1 Sweden sold 259,000 long tons, Norway, 14,000 tons and Finland, 50,400 tons, a total of approximately 343,500 long tons or 73 per cent. On April 1, the sales amounted to 379,000 long tons, or 81 per cent.

Mr. Asplund said that the condition next year at this time would depend on prospective increases in American mills. There would be a slight increase in Sweden and also in Finland.

Credit Men Jail 62 Bankrupt Crooks

In the past ten months ending March 31, 1926, 62 convictions for bankruptcy frauds were obtained by the National Association of Credit Men, J. H. Tregoe, executive manager of the National Association of Credit Men, reports to the subscribers of the million-dollar credit protection fund.

In March, the association's credit protection department obtained fifteen convictions and fifty indictments, and there are at present 471 cases and 258 indictments pending. The department has accepted 653 cases since the million-dollar fund was put into operation.

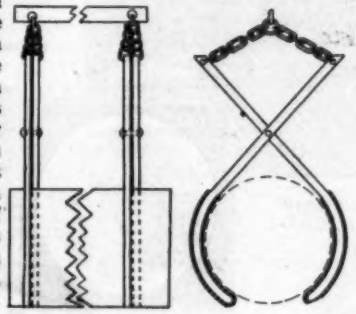
"There is now pending in Congress," Mr. Tregoe said, "a bill to amend the Bankruptcy Act which will make it more difficult and dangerous for dishonest bankrupts to conceal their assets and otherwise defraud creditors. The penalty for violation of the act, if amended, will be increased from two to five years."

According to advices to friends in New York, Philip T. Dodge, president of the Herkimer Fibre Company, and former president of the International Paper Company, who has been recuperating for some time along the shores of the Mediterranean, planned to sail for home late in April.

Practical Helps for the Mill Man

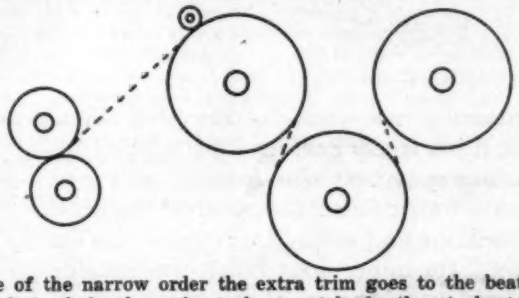
Roll Grab

TRANSFERRING rolls from the paper machines to supercalenders and to other places in a mill can be expedited by the following roll grab on the tongs principle. The diagram shows a side elevation and end view with the roll indicated in the end view by the dash lines. The part of the tongs which comes in contact with the roll is covered with either leather or copper. This part of the tongs is about two and one-half feet in length in the direction of the axis of the roll. This grab has been used on seventy-three inch rolls, and even on larger sizes. The use of the grab eliminates the loss of paper which frequently results from the use of a bar and chains as often the chains touch one or both ends of the roll and tear through the paper to a depth of a half inch or more.



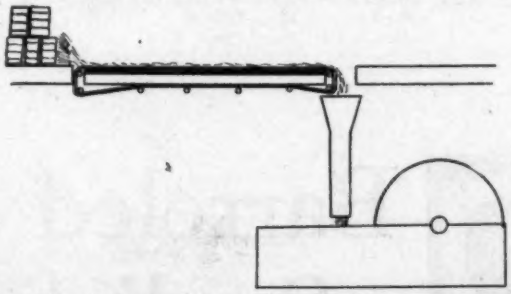
Trimming the Sheet

IT IS found that it is economical and otherwise desirable to trim a sheet of cardboard as it goes onto the first dryer on the machine. This is done where there is a narrow order on the machine or where the deckle edge is not so good. In the case of the narrow order the extra trim goes to the beaters and it is obviously easier to beat wet broke than to beat the dry shaving. Then, too, it is not necessary to dry all that paper only to have it cut off as shaving. So far this has been done only on a board machine.



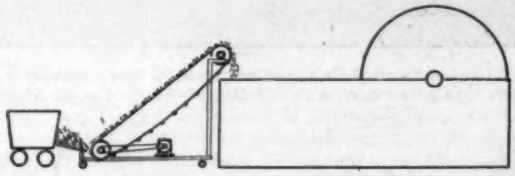
Labor Saving Conveyor

LABOR may be solved by filling a breaker beater or other beater with old papers, roofing fet rags, pulp laps or other stock from the floor above. The conveyor consists of a wide rubber belt running on a steel plate. The bales are opened near the conveyor which dumps through a hole in the floor over the beater to be filled. Only one section of the conveyor is shown in the diagram. The maximum of economy could be secured by having one long conveyor going over a whole line of beaters. There would be a hole opposite each beater and a board laid across the conveyor belt would direct the raw material into a chute leading to the beater in question.



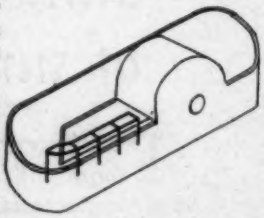
Small Mill Conveyor for Filling Beater

A MILL which trucks its cooked rag stock to the beaters in small box trucks has worked out the conveyor shown in the diagram for speeding up the work of putting the stock into the beater. This is used particularly with the beaters with the high sides and is working out very satisfactorily. A number of these units are in use in the same mill.



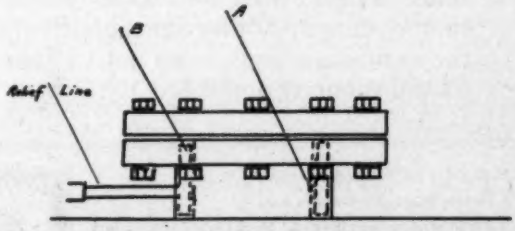
Guard on Beaters

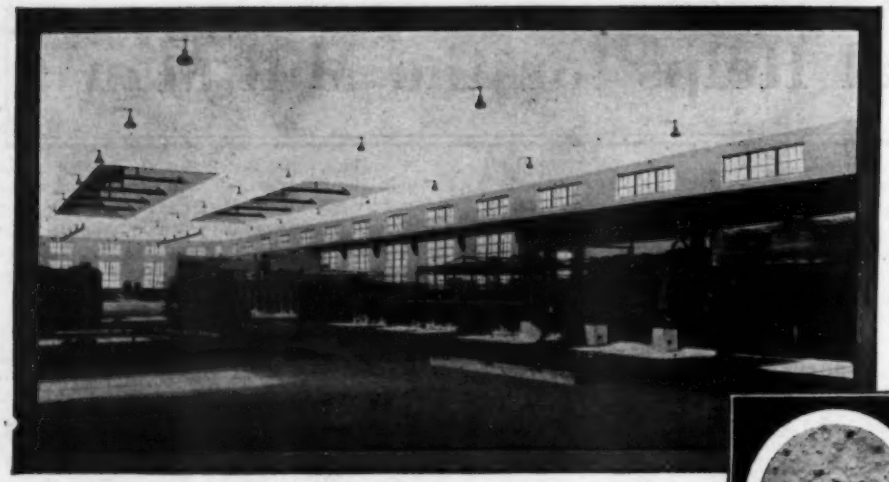
FEEDING pulp laps or any material into beaters usually involves poking the material with a paddle until it catches under the beater roll. In operating a beater, there is also the necessity of scraping the bottom of the beater before another beater load is dumped. In both cases there is a possibility of the operator getting his paddle too near the beater roll and when slightly off his balance being thrown into the stream of clinging pulp and being drawn under the beater roll. One company has every beater in its mill equipped with a pipe railing just ahead of the beater roll where the beater man stands to feed material into the beater or where he works with his paddle. There is no possibility of his being drawn into the stock with this guard in place.



New Place for Top Relief Strainer

A SULPHITE mill with a large production places its strainer for the top relief in the neck of the digester and the top relief is connected to the digester proper and not to the removable lid. In the diagram the relief line is shown and marked clearly. At (B) is shown in dashed line the space in the neck of the digester lying back of the strainer. The strainer goes all around the neck of the digester on the inside face (A). The advantages of this device are that it is not necessary to disconnect the top relief line in order to remove the digester top. The holes of the strainer—running all the way around the neck of the digester, are much less liable to clog than in the beehive type attached to the lid.

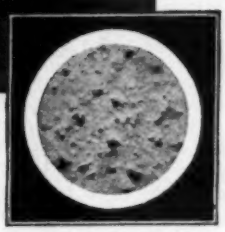




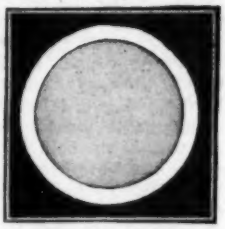
Barreled Sunlight's superior qualities have proven a real economy in this plant of the Frank Smith Paper Co. at Middletown, Ohio

The microscope shows why Barreled Sunlight is easy to keep clean

The photographs of white paint surfaces shown below were taken through a powerful microscope. Each paint was magnified to the same high degree. The astonishing contrast shows why Barreled Sunlight is so easy to keep clean. Its surface is smooth, unbroken and non-porous. It resists dirt and washes like tile.



Ordinary Flat Finish White Paint



Barreled Sunlight

Lustrous – white – washable . . . *and this smooth, durable paint costs less per sq. ft. of surface covered* –

THE Frank Smith Paper Co. wanted a paint that would assure them correct light-reflection, lasting whiteness, freedom from flaking or scaling, reasonable cost of application, and long service without repainting. They chose Barreled Sunlight.

The lustrous surface of this paint reflects just the right quality of working light—free from glare.

Made by the exclusive Rice Process, Barreled Sunlight is guaranteed to remain white longer than any gloss paint or enamel, domestic or foreign, applied under the same conditions—also not to flake or scale if properly applied.

Containing no varnish, Barreled Sunlight flows freely and may be applied by brush or spray, *at the lowest cost per square foot of surface covered*. Once on the ceilings and walls, it will serve you for years. Its impervious finish washes like tile, and washing does not injure the paint.

Barreled Sunlight is sold in 55- and 30-gallon churn-equipped steel drums, and in cans from ½ pint to 5 gallons. Where more than one coat is required, use Barreled Sunlight Undercoat first.

Send the coupon for illustrated booklet and a panel painted with Barreled Sunlight.

U. S. GUTTA PERCHA PAINT CO.
Factory and Main Offices
2 Dudley Street, Providence, R. I.
New York—350 Madison Ave. Chicago—659 Washington Blvd.
San Francisco—156 Eddy Street
Distributors in all principal cities

U. S. GUTTA PERCHA PAINT CO.
2 Dudley Street, Providence, R. I.

Please send us your booklet "More Light" and a panel painted with Barreled Sunlight.

Name.....

Street.....

City.....State.....

THE RICE PROCESS WHITE

Barreled Sunlight

Reg. U. S. Pat. Off.

Paper Mill Ventilation*

The Subject Applied to Heating and Ventilating the Machine Room

By S. W. FLETCHER
Ross Engineering Corporation

TO DEAL with the general subject of heating and ventilation in the pulp and paper industry in this paper would mean touching only lightly on the requirements of each department, and, therefore, for the sake of brevity and giving the subject the attention it deserves, this paper will consider only the heating and ventilating of the machine room.

This is the most important division of the paper mill when heating and ventilating is considered, for the first cost and operating cost are not only the greatest in this department, but the failure of the ventilating system may result in a serious loss in production. There is a great deal of moisture given off in this department, both from the wet end during the formation of the paper and from the dryers by turning the water in the sheet into vapor and it is definitely understood that this moisture must be absorbed and carried out of the machine room by means of air. The capacity of the air to carry this vapor or moisture depends entirely upon its temperature. The higher the temperature, the greater is the moisture-carrying capacity of the air.

To Obviate Drip or Condensation

The most economical system is the one which will take out the greatest amount of vapor with the smallest quantity of air without allowing condensation to form on the roof, and without using extremely high temperatures. Although air rising from the paper machine may be only partially saturated it may be cooled down when coming in contact with the cold roof below the saturation or "dewpoint" where it is unable to hold the moisture in suspension, and the excess amount of water is deposited on the roof as condensation or drip. It can readily be seen therefore that enough air must be passed through the machine room to absorb the moisture and yet not permit the vapor laden air to be close enough to the saturation point for the cold roof to cool it down below this point.

It will be evident that the higher the temperature of the air passed through the machine room, the less air will be necessary to absorb the vapor and prevent condensation, but there are certain limiting factors entering into the degree of temperature that can be used, such as the one of unpleasant heat in the machine room. It is also necessary to have a certain amount of air to give good distribution of the air in the room.

Early Ventilating Systems

One of the oldest forms of ventilation in the machine room was the use of steam coils on the roof which prevented condensation by keeping the temperature adjacent to the roof even higher than the temperature of the vapor rising from the machine. This type of system had no fixed supply of air although air was drawn from the room by exhaust stacks or fans, but depended on inleakage to supply the necessary air. It did keep the roof dry but was an expensive system to operate because the high temperature at the roof greatly increased the radiation through the roof and heated the air to high temperatures just before it left the machine room, instead of making the extra heat do its work during the passage of the air through the machine room. The air leaking into the machine room not only caused drafts which were detrimental to the drying of the paper, but as the size of the machines increased actually took so much air from the beater and finishing rooms that heating systems for these departments were condemned as inadequate, whereas they were actually of ample size to do the work for which they were designed. To overcome this air loss from these rooms and to prevent cold inward drafts to the machine room, the openings were closed up, and this, of course, resulted in a considerable decrease in production.

As it began to be realized that a certain definite amount of air must pass through the machine room, it became evident that it was a better policy to preheat this air before it came to the machine room. This led to the introduction of the fan systems. The air was introduced along the roof, replacing the steam coils, and also did away with the inward drafts to the room. The temperature at the roof was lower than formerly, but kept the roof in better condition.

These air systems were designed by rule of thumb methods, usually based on some particular installation that had worked out satisfactorily in a room which looked somewhat similar. This gradually led to figuring systems on the air change principle. If the room looked particularly bad or the machine rather large a fairly rapid air change would be figured, ranging from 5 to 10 minutes. This meant that enough air would be put into the room to replace its total cubic contents every 5 to 10 minutes. To be absolutely sure that no drip would occur the 5-minute air change would be figured. As no attention was paid to the amount of vapor to be obsorbed, this method of figuring resulted in some systems that were wholly inadequate for the work and in others that were so much in excess of the actual requirements, that, had there been the keen competition of today with the present price of fuel, these mills could not have competed.

It was realized a few years ago that a big machine in a small room should have more air than a small machine in a big room which was contrary to the air change principle, and that the amount of air should be dependent almost entirely on the quantity of water evaporated, and that all of this air must be heated somewhere in the mill from the outside temperature to the temperature at which it leaves the machine room.

Cost of Ventilation

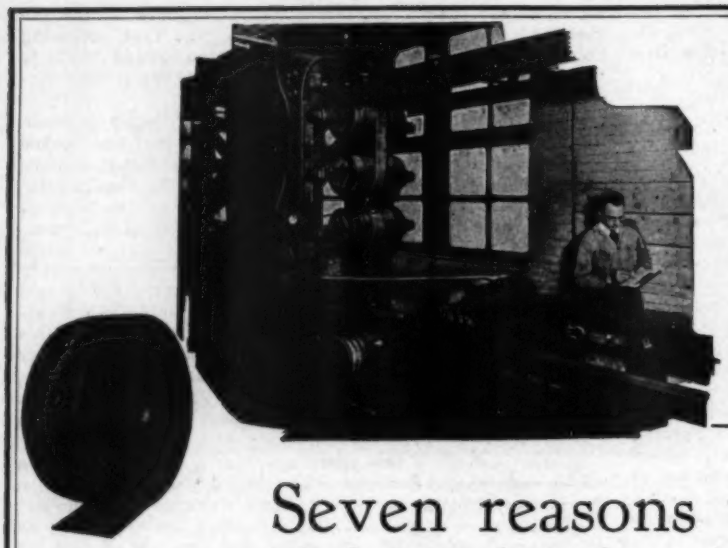
It was the realization of this fact, and the tendency toward more economical operation, that led to the investigation of the cost of ventilation and it was found that this amounts to 25 to 50 percent of the total steam for drying the paper. This, of course, resulted in the development of means for cutting down this amount of steam. It was found that air going out of a machine room where the machine had no hood contained only two-thirds as many grains of moisture per cubic foot as did that leaving a machine fairly well hooded. This meant that a third more air was passing through the machine room without a hood than the one with hood and utilizing a third more steam for this air.

It might be well to consider here the cost of ventilation for a 75-ton machine reasonably closely hooded, in a fairly mild climate having an average yearly temperature of 50° F. With the machine operating 95 percent effectively, which means that the 75 tons would be produced in 95 percent of the 24 hours, the other 5 percent being used for breaks, shutdowns, washups, etc., the machine while running effectively, was turning out 110 percent of paper per minute. With the paper entering the first dryer 30 percent dry and leaving the last dryer with 7 percent moisture content, we would have 2.1 lb. of water to be evaporated for every pound of paper going over the machine, which in this particular case would amount to 231 lb. of water evaporated per minute. In addition to this there would be approximately 19 lb. of water per minute evaporated over the wet end, making a total of 250 lb. of water per minute to be absorbed by the air passing through the machine room. This would require about 87,500 cubic feet of air per minute and the steam to heat this air from the average temperature of 50° to the stack temperature of 116° would be 110 lb. per minute or 6,600 lb. per hour. With a steam cost of $0.50 per 1,000 lb., this would amount to $3.30 per hour or $77.20 per day. Over a period of a year the steam cost would be $23,160.00, and it must be borne in mind that this machine is in a mild climate and efficiently hooded. In a cold climate and without an efficient ventilating system, the cost might be double that given above.

Utilizing the Hot Air

Experiments were performed to see if this hot air could not be made to do additional work and it was proved that by introducing the air directly on the machine to absorb the vapor at its source greatly increased the production on the machine. It also tended to decrease the steam pressure on the machine, thereby reducing the back pressure on the engine or turbine, which cut down their steam consumption and increased their power output. This system is known as the Vapor Absorption System. The air is applied to the paper

*Read before the Southeastern Division of the Superintendents' Association at Canton, N. C., March 27, 1926.



An improved leather belting that wears better

The leather belts made by the pre-tested method of construction by the Chicago Belting Company have many advantages. They are the most standardized high quality leather belting made. They wear better and do better work because they average more strength, less stretch, a higher surface adhesion and more leather per pound than any other first quality center stock oak tanned leather belting.

Seven reasons why Chicago Belting leather belts are better for paper mill drives

1.—Chicago Belting leather belts last much longer than rubber belts on most every paper mill drive—sometimes lasting four to six times as long.

2.—On a service basis they cost *much less* than rubber belts.

3.—Rubber belts frequently slip as high as 10% while apparently running perfectly—while Chicago Belting leather belts rarely slip more than 3% and usually not more than 1½%.

4.—These leather belts have a much greater surface adhesion to the pulley which gives them a better grip. This better grip enables you to run these leather belts at much less tension than is required for the same power transmission with rubber belts.

5.—The decreased tension means *less* strain on the bearings and *less* power consumption.

6.—As Chicago Belting leather belts require less power their use has a favorable effect on your flow sheet.

7.—Chicago Belting leather belts have a high overload capacity—while rubber belts have little or none.

These are some of the arguments in favor of leather belts for paper mills—there are others—equally effective.

Among the leather belts on the market those made by the Chicago Belting Company are superior by every test of belting quality—by chemical tests—by physical tests and by actual service tests on the pulleys.

They last longer because they average more tensile strength, less stretch, a higher adhesion and more leather per pound than any other oak tanned center stock first quality leather belting. Those mill men who understand what there is about belt transmission that makes one leather belt so much better than another will understand just how much better such leather belts must be.

Chicago Belting Company

Manufacturers of Leather Belting

118 North Green Street
Chicago, U.S.A.

Chicago Belting

Made by the pre-tested *method*

machine by means of special nozzles extending across the machine in the vapor pockets around the machine. The elimination of the vapor in these pockets and the lower temperature drying due to decreased steam pressure produces a much better sheet, for the conditions more nearly approach those of an air dryer.

Application of the System

These systems are mainly used on board and pulp machines which operate without felts, but recently a number of installations have been made on machines running with felts, making various grades of paper, and with very satisfactory results. On these machines the system cuts down the steam pressure on the machine and increases the production, and extends the life of the felts to a considerable extent. On most machines with felts, it is almost impossible to get any air in the pockets above the felt, and if it is desired to get the maximum work out of the air a small portion may be blown through these pockets. This should be done by bringing pipes down in front and blowing toward the back, care being taken to see that the drop pipes coming down in the front do not interfere with threading the machine. The air thus introduced on the dryer should not be allowed to blow on the sheet as it might cause wrinkles and not enough air should be blown into the pockets to cause the front edge to dry faster than the back.

Putting air on the felts has become general practice in most of the new big mills. With the advent of the big high-speed news machines and with more attention being paid to the insulation of the roof, the amount of vapor to be absorbed requires considerably more air than is required to keep the roof in proper condition, and this surplus is blown on the lower felt by means of nozzles placed under the bottom return felt and also up under the dryers above the return felt. This results in a circulation of warm air around the dryers with the attendant advantages described above.

The Machine Room Roof

The air which goes to the roof is of first importance and the amount depends on the construction of the roof and the material that is used, as well as the type of hood with which the machine is equipped. One type of machine room which has received much favor recently has a false ceiling suspended from the underside of the trusses. This type permits the installation of air ducts in the chamber over the ceiling and the air can be introduced at various points along the room through outlets in the ceiling. These outlets should be equipped with deflectors to cause the air to flow across the flat ceiling. Even with this type of construction it is important to have a well-insulated main roof.

When no false ceiling is used it is desirable to avoid having purlins running lengthwise of the roof. If it is found necessary to have them, they should be arranged so that they do not come in contact with the roof. With this arrangement it is possible to install an air duct along the sides of the machine room discharging air toward the center of the room. Care should be taken to obtain as nearly as possible an equal volume of air for every square foot of roof surface, in order to get the greatest efficiency from the system. This is usually done by building the duct with a large number of small openings which give practically a continuous flow of air the whole length of the duct.

With lengthwise purlins, it is impossible to use such an arrangement with satisfactory results. The air strikes the first purlin and is deflected, leaving a space behind the purlin without any air and condensation is apt to result. It is therefore necessary with lengthwise purlins to blow the air lengthwise of the room, and this is done by bringing branch pipes from the main duct toward the center of the room and installing outlets blowing along the roof in both directions. This, of course, makes the first cost of the system somewhat high, but it is the most efficient way of taking care of a condition of this sort.

Types of Machine Hoods

There are many devices for getting the air out of the machine room after it has absorbed the vapor and these may be divided into two general classes: the machines which have hoods, and the machines which do not have hoods. It will readily be seen from the foregoing discussion that to have the most efficient system, a hood is required and the closer the vapor is confined the better. There are various types of hoods varying from a flat covering over the machine to the so-called cross ventilation hood and there are advantages and disadvantages in all of them. With a hood the vapor may be taken out through hooded stacks or through natural draft ventilators. It is preferable to have fans for creating the draft artificially and they may be either the centrifugal, the disc or propeller type. If it is desired to convey the vapor any distance the centrifugal fan is preferable and it also does not present the complications in arranging the motor drive. If the machine is not hooded, the air is often allowed to escape through a ventilating monitor, and various small ventilators in the roof. Both of these are troublesome as they are subject to back drafts and in this case also exhaust fans are desirable.

Importance of Waste Elimination

From the foregoing discussion it will be seen that the cost of ventilation in a paper machine room is quite an apreciable item, and that the elimination of any waste is of tremendous importance. The greatest waste in connection with the ventilation of the machine room is the enormous amount of hot moist vapor going out of the room to the atmosphere. Most of the steam utilized in the dryers of the paper machine has been used to turn the water in the paper into vapor and it is therefore evident that the outgoing vapor contains a large proportion of the heat generated by this steam.

Methods of Utilizing Waste Heat

There are two general methods of utilizing the waste heat: one to heat water and the other is to heat the incoming fresh air. The apparatus used for heating water consists of a multiple stage air washer in which the water is finely atomized in each stage and passes from the first stage to the second and from the second to the third and so on. The vapor is drawn through this finely atomized water in a counter current direction and the hot vapor coming in close contact with the fine spray transfers its heat from the vapor to the water. To give an idea of the amount of heat that can be recovered, a pound of water for every pound of vapor used can be heated from 40° F. to from 90° F. to 100° F., depending on the initial condition of the vapor. The counter-current principle allows the water to be heated to a temperature considerably higher than the temperature of vapor going to the atmosphere. This method of recovering heat is especially advantageous for mills using hot water in the beaters.

The Briner Economizer

The other method of recovering this heat in the vapor, that of utilizing it to heat the incoming fresh air is the most common method. This is known as the Briner economizer and consists of a series of narrow air chambers through which the hot vapor and the cold air are carried. The vapor passes through alternate passages of the economizer and the cold air through the other passages, and the heat from the vapor is transmitted through the walls to the cold air. The cooled vapor is passed to the atmosphere by means of an exhaust fan and the warmed fresh air is taken in through auxiliary heaters to the fan supplying air to the machine room. There is a considerable amount of water condensed from the vapor and this may be utilized or drained to the sewer.

The transmission of heat through the plates of the economizer is in direct proportion to the difference in temperature between the cold air and the hot vapor. This, of course, means that the greatest number of heat units will be recovered when the weather is the coldest. The temperature rise that can be obtained on the incoming fresh air depends on temperature and humidity of the outgoing vapor, and the initial temperature of the incoming fresh air. In many installations it has been found that the economizer will heat the air even in coldest weather sufficiently high to introduce it into the machine room without additional heat.

Suppose an economizer is installed on the 75-ton machine outlined in this paper. Assuming average outgoing vapor conditions on this machine, we could expect to heat the air from the average temperature of 50° F. to 100° F. The saving involved here would amount to aproximately 75 per cent of the total ventilating steam on this machine or about 5,000 lb. of steam per hour, or a saving of about $17,500 per year in

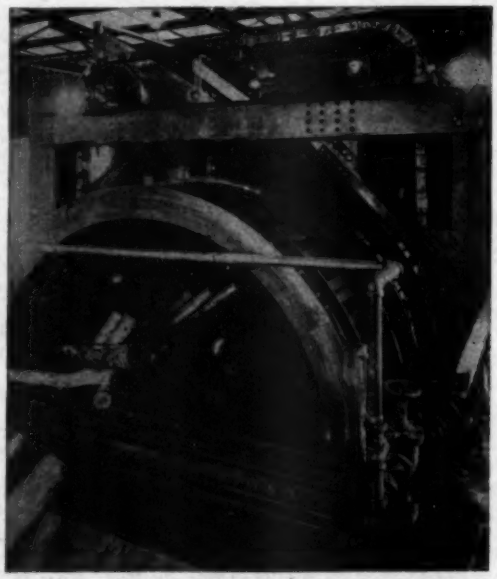
When Mill Owners Face the Facts About

DRUMS

THE BEST selling argument which will ever be advanced for any kind of equipment is the results it will produce. It is so with barking drums.

TO FIND the drum that will do good work for you, look for the drum that has done good work for others. Specifications will help you check the price. Only performance can justify the purchase.

TEN YEARS AGO, we sold our drums on the strength of how they were built. Today they are bought for what they will do. The U-bar is still the happy compromise between a sharp angle and a flat surface. It remains the reason for complete and perfect barking without bruising. And the chain-suspension still accounts for smooth operation at amazing speed. Compare this 128-point support with trunnions! So, through the list; six-inch pitch chains of special design, casehardened; guiderolls with chilled rims; full-toothed sprocket rings for complete traction; spring take-ups which not only function perfectly as such, but are perfect shock-absorbers that cushion every jar or jolt.



Discharge end of drum installed for Northern Ontario Light and Power Co., Ltd., Haileyburg, Ont.

ONLY AN ENGINEER can sense the integrity of our whole design. But many mill men have accepted it as such—have adopted this equipment to the exclusion of all other—and are profiting thereby.

WE GIVE complete data gladly. And state specifically the character and quantity of work each of our drums will produce. First, though, we like to have a prospective purchaser view an actual drum in operation. If it be in a mill where there is a drum of another make alongside, it affords an interesting comparison.

SEVENTEEN MILLS ordered our equipment in 1925. Some had drums of another make. Some already had our drums, and ordered more. *Nor were there seventeen mills—nor seven—outside of these we name who ordered barking drum equipment of any or all other kinds.*

HERE IS a list of purchasers of our drums in the year just past. It should be sufficient of itself. It *proves* which type of barking drum is the best to buy. If you have the vestige of a doubt, write any of these mills —or all!

DeGrasse Paper Co., Ogdensburg, N.Y.	1-10'x30'
West Virginia Pulp & Paper Co., Covington, Va.	1-10'x30'
West Virginia Pulp & Paper Co., Williamsburg, Pa.	1- 8'x20'
St. Maurice Paper Co., Charlemange, Que.	2-10'x30'
Wayagamack News, Ltd., Three Rivers, Que.	4-10'x30'
Metabetchouan Sulphite & Power Co., Ltd., Desbiens, Que.	1-10'x30'
Oji Paper Mfg. Co., Ltd., Shibaku, Tokyo, Japan	1-10'x30'
Sande Traesliperi A/S., Oslo, Norway	1- 8'x20'
Oregon Pulp & Paper Co., Salem, Oregon	1- 8'x20'
Tonawanda Paper Co., Inc., N. Tonawanda, N.Y.	1- 8'x20'
Calcacieu Sulphate Paper Co., Elizabeth, La.	1-10'x30'
Port Alfred Pulp & Paper Corp., Port Alfred, Que.	1-10'x20'
St. Regis Paper Co., Deferiat, N. Y.	1-10'x30'
A.P.W. Pulp & Power Co., Ltd., Sheet Harbor, N.S.	1-10'x30'
Fletcher Paper Co., Alpena, Mich.	1- 8'x30'
Central Paper Co., Muskegon, Mich.	1-10'x30'
Powell River Co., Ltd., Powell River, B.C.	2-10'x30'

22

Fibre · Making · Processes · Inc.

Chicago

steam cost. These are tangible figures, but there is a factor which is very important in this connection and that is that when a Briner economizer is installed, very little more steam is required in the coldest winter than in mild weather, thereby taking a big load off of the boilers at the time when the demand on them is the greatest.

Commercial Laboratory for Fiber Board Makers

Full Size Heavy Board Machine Available for Experimental Work

THE size and nature of pulp and paper mill equipment has had its effect on the rate of development of innovations. The character of the paper making fiber precludes the miniature or model in some classes of paper mill equipment. The large amounts of water which must be handled with the fiber make wide differences in performance of different sizes of pulp and paper mill machinery and make it difficult to conclude that what is true of the model will be true of the commercial size. In general paper and pulp machines are big machines and their very size stands in the way of the accumulation for experiment of sufficient raw material for treatment to give result on which commercial performance may be predicted.

The existence of these conditions has made both paper machinery manufacturers and paper machine operators slow to set up experimental machinery. The ideas for innovations in paper and pulp machinery have emanated from both groups but it has only been when a paper maker has become sufficiently convinced of the probability of success of an idea that it has had an experimental run and this has usually been given in the commercial plant of a paper company. This in turn has slowed up the development of ideas which have arrived even at this point. In justice to his profit and loss statement, the paper maker cannot long permit any one unit of his mill to remain unproductive or productive at a low efficiency. Consequently an idea fundamentally sound, but which has needed some considerable development under commercial conditions to make it a success, has, when its presence in the operating system of the mill has cut heavily into the production, been relegated to another trial perhaps months and years away.

An Experimental Machine of Commercial Size

One firm is convinced that it has the solution for a definite problem in the drying of products made from fiber. It has developed after considerable study a drying device which is designed for those fiber boards which, on account of the thickness of the board, cannot be passed over a regular set of paper machine dryers. At the plant of the Coe Manufacturing Company, Painesville, Ohio, where this machine is being manufactured, an experimental machine has been set up which is of commercial size. It is possible to conclude from results secured from any installation that the same results can be secured from any installation of the same equipment. This laboratory is placed at the service of the manufacturers of fiber board who wish to determine its applicability in their plants in eliminating expensive and extensive drying installatons, either in open rooms or in kilns, but where the material is handled with considerable expenditure of labor. The service is complete, comprising the complete dryer and ventilating system with indicating and recording instruments that show the conditions of operating at all times. There is also auxiliary testing equipment to make tests of the material entering and leaving the machine.

The Coe Dryer for wall board, insulating board, binders' board and other heavy sheet products is designed primarily and solely to handle boards which are too thick and stiff to be handled over the regular cylindrical paper machine dryers. The dryer will handle nearly all flat products made from ⅛ to ¾ inch thick made by wet machines, presses or pasters from fiber, pulp plaster, or other composition.

Certain products from fiber are made on special machines. The machines resemble very closely the ordinary wet machine for pulp, except for one feature. There is a deep score lengthwise of the top press roll on which the pulp accumulates. A small roller running on the pulp calibrates it and when it is of the requires thickness, the operator of the machine cuts the pulp along the score and removes the pulp from the top press roll in a sheet. Sometimes there are two scores diametrically opposed and two sheets are formed at the same time.

The sheets taken from these wet machines are too thick to dry over a set of paper machine dryers and the practice is to place them in racks and put them in a kiln whence they are removed later, dry but badly warped. A machine which is practically a calender with only two rolls is later used to straighten the boards. This handling into the dry kilns and out again may be greatly simplified by the use of a roller dryer of the Coe principle, and the design of the dryer to keep the boards from warping in drying is an additional feature.

The Coe Dryer for Heavy Boards

There has been some reluctance to form extra thick sheets of the fiber board on a machine of the cylinder type because of the impossibility of passing the sheet continuously over the regular paper machine dryers. This applies of course only to very thick boards and not to such boards as are now made and dried successfully on regular board machines with the usual dryer installation. Handling the very thick boards when they were still wet made the wet machine the preferred machine for the making of such products. The development of the Coe machine has made possible the formation of thick boards in a continuous sheet on cylinder machines and their being dried on a dryer of the Coe type, the cutting being done after the sheet is dried.

The dryer consists briefly of a long, enclosed, insulated box or compartment, heated with steam coils, the material to be dried being passed through continuously over or between driven rollers and the moisture being removed by a suitable fan system. The rollers are not heated and are 3 inches or 3¾ inches in diameter. If a very smooth calendered surface is desired a top roller is used which adjusts automatically for different thicknesses. The drying process differs greatly from the regular paper machine drying machines. In the Coe machine the dryer is entirely enclosed and drying is accomplished entirely by high temperature air circulation and radiant and convected heat from the steam coils.

It is the idea of the Coe Manufacturing Company that with the wide increase of the tendency among manufacturers in the United States to eliminate waste there are increasing supplies of fibrous or other raw material capable of being formed into sheets for insulating board, wall board, binders' board and similar products. Much of the difficulty in developing such possibilities lies in the question of how the formed sheet is to be dried properly and economically. The Coe Manufacturing Company has at the service of those who may wish to develop such a way of disposing of raw material a commercial sized drying laboratory. This laboratory is also at the service of those now making thick fiber boards which are air dried or dried in the old fashioned kiln. The results secured in it may be depended upon to be more than experimental—they are on a truly commercial basis.

The equipment of this laboratory for the use of fiber board makers is only one more example of the anxiety of all paper machinery manufacturers to aid in the development of more efficient methods of paper mill operation. It is a step in advance.

Mr. R. N. Miller, of the pulp and paper staff of the U. S. Forest Products Laboratory, Madison, Wis., has left to enter the employ of the Paulista Railway Co., of Sao Paulo, Brazil. Mr. Miller's connection with the Brazilian company comes as a result of the work on the pulping of eucalyptus wood for newsprint paper which was carried on under his direction in December. His first undertaking will be to survey the possibilities of manufacturing newsprint at Rio Claro, Sao Paulo, where the eucalyptus plantations are located. If the building of a pulp and paper mill is justified, Mr. Miller will be in charge of the planning, erection, and operation of a mill with an initial capacity of 50 tons of newsprint per day.

The Universal Crepe and Tissue Mills, Inc., of New York, has increased its capital from 500 to 4,000 shares, of which 3,000 are valued at $100 each, and 1,000 are common shares of no par value.

Satisfaction in Sizing

THE effect of sizing upon the quality of paper is far reaching. In fact it is a "key" process.

The recognized importance of sizing necessitates the use of dependable size —such as Kalbfleisch Rosin Size has proved itself to be.

Equally valuable is Kalbfleisch service. The long experience of their Engineers with sizing processes has given them a fund of knowledge that is willingly placed at your disposal. They will cooperate in every way to secure the best results from the De Cew patented sizing process in conjunction with Kalbfleisch Chemicals.

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Improved System of Shipping Paper

Uni-Lastic Stowage of Roll Paper and Paper on Skids

RAILROAD men and shippers generally have carefully investigated a new system of car loading devised by the Gerrard Wire Tying Machines Co., Chicago, and agree that the underlying principles are correct and that they are working out daily in actual practice, particularly to the benefit of paper mills.

One paper mill executive states that "Uni-Lastic Stowage is the greatest development in the loading of paper shipments in the last century."

Buyers of paper are also taking a great deal of interest, and their interest can well be understood, in that shipments

Newsprint rolls securely fastened by Gerrard system

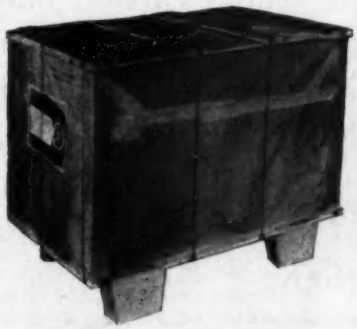
packed in this way arrive in "apple-pie" order and are easily accessible for unloading.

Then and Now

Heretofore, the general scheme of freight car stowage has been based on stowing the lading as rigidly as possible and endeavoring to retain that rigidity by heavy timbering, or other means, so as to prevent any shifting or movement. In many instances, the lading is firmly attached to the car itself by bolts or other means.

Uni-Lastic stowage reverses this principle. The lading is usually separated into two units, one in each half of the car. These units are securely bound with several strands of No. 8 gauge wire, applied under high tension with the Gerrard Model "G" machine. More permanent and even greater compactness is obtained than by former methods of stowage. There can be no play between component parts of a unit, yet the unit itself is left free to shift under severe impacts which would damage both the lading and the car.

A stowage unit usually weighs about ten tons. A compact mass of such size will shift but an inch or two except under the most severe impacts. But that slight shift is sufficient to absorb the force of an impact without damage to the lading. Impact tests ranging so high as fifteen miles per hour have been made without damage to lading and in some such tests the lading has shifted as much as twenty inches.



Flat paper on shipping skid

Uni-Lastic stowage eliminates damage from the millions of shocks from train vibration, from the shocks of starting and stopping trains, and from the heavier impacts of low speed switching. It greatly reduces and often eliminates damage from switching at higher speeds which come within the scope of "rough handling."

This method of stowage has been found particularly applicable to shipments of roll paper. It has been customary in the past to endeavor to protect roll stock by toe blocking, heavy timbering and the lining or padding of cars with paper. But the cost of such protection has been high and the damage heavy.

By preparing roll paper for shipment with Uni-Lastic stowage, paper mills have eliminated practically all damage and saved the cost of dunnage and paper lining, saved time in loading, made unloading easy—all at a much lower cost.

The traffic manager of a large metropolitan newspaper estimates a saving of $15,000 a year on shipments of newsprint from mill to printing plant.

This method as applied to shipments of strawboard effects the same economies as on roll paper.

Other Savings

In addition to the prevention of damage, the Gerrard system of stowage saves the shipper from $2.00 to $5.00 or more per car in cost of loading, greatly reduces the consignees' cost of unloading, eliminates all freight paid on dunnage over thirty pounds, stops damage to rolling stock by eliminating spikes and timbering, and saves for shipper, consignee and carrier not only the losses resulting from damaged shipments but also claims, complaints and correspondence—"overhead" which commonly costs more than the damage to be adjusted.

Packing Skids by Gerrard Method

The same materials and machines are used in packing skids as are used in preparing roll paper for shipment. Here is another new method that is saving the paper mill huge amounts of money. Printers have repeatedly expressed a preference for shipments of sheet paper on skids because of ease of handling. A skid can accommodate four to five thousand pounds of paper, about eighteen or nineteen reams, an amount which would require eight to ten wooden boxes if packed in that way. Now skids fastened with wire cost only $3.50 to $5.00 to make and they may be used over and over again.

Uni-Lastic stowage of strawboard

The cost of wire is about 40 to 60c a skid, depending on size. It is much more expensive to ship paper in boxes, as the cost amounts to $20.00 to $24.00 a box, plus the cost of labor for nailing and strapping.

Thus there is a saving effected of $16.00 to $18.00 on two to two and one-half tons of paper. Paper manufacturers find their packing cost reduced to about $2.50 per ton, a saving of 75 per cent over the old methods.

This method of shipping has many advantages appreciated by printers. There is no cost for unpacking and no paper wasted in unpacking. Many printers do not rehandle their paper at all, but simply wheel the skid into place under their automatic press feeders.

The wire is applied, tensioned, and cut in series of simple operations by a new tying and cutting apparatus of small size called the Gerrard Model "G" Little Giant machine, which can be operated by any lad of ordinary strength.

The machine can be used in strapping case paper, tying paper on skids, or tying carloads of roll stock.

One user of this system states that a skid can be made to take smaller sizes of paper as holes can be bored at suitable points for inserting wire.

These developments in both the shipping of roll paper and paper on skids have become beneficial to paper manufacturers, and most paper mills, if not already using this system, will soon fall in line once they are aware of its advantages.

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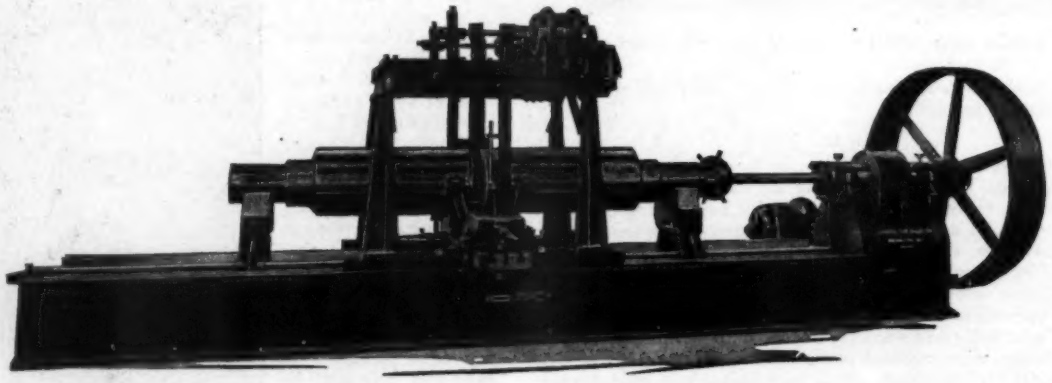

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Rosin Troubles in Papermaking

By JARL ENCKELL

IN THE accompanying article Jarl Enckell, a Finnish paper mill engineer, prescribes a remedy for the rosin troubles originating in the sulphite pulp, which are so frequently encountered in papermaking processes. The article appeared originally in the Papir-Journalen and was reproduced in the Papierfabrikant, from which it has been translated for the World's Paper Trade Review.

"It is well known that, in the process of paper manufacture the sulphite pulp frequently gives trouble by deposits of resinous matter forming on the wire and press rolls, as also in the beaters, stuff chests, etc., giving rise to endless difficulties. The same troubles are also experienced in pulp mills. I will therefore describe the part played by rosin in the various phases of pulp and papermaking, and attempt to illuminate and criticise the different proposals made for the removal of difficulties due to resinous substances.

"It is well known that pine wood contains very varying quantities of rosin; Wahlberg, who has made the latest exhaustive examination, finds it to vary from .087 percent to 4.02 percent. According to Sieber, this rosin has two components, fat and real rosin, and he ascribes the main difficulty to the presence of the fat.

"Through long storage of the wood the fat loses its stickiness and becomes brittle; pulp made from such wood generally gives no rosin troubles. But this is no absolute cure, and storage carries other difficulties with it. A large stock of timber represents an appreciable amount of capital tied up and, moreover, there is the risk of loss through rotting. Notwithstanding the numerous proposals for dealing with this difficulty, long storage is the only one which has found general acceptance.

"Sieber and Aschan have studied the action of the digesting liquor on rosin and find that there is very little alteration, only 4.2 percent of the rosin going into solution. By rosin it must be understood that I here mean the total contained, real rosin and the fats together.

Methods of Removal

"In spite of Sieber's findings, there are countless methods for removing the difficulty by alterations to the digestion liquor and the method of boiling. Some of these have given good results in one works and have entirely failed when applied in another. Wimmer (Pulp and Paper Magazine of Canada, 1917, p. 462) recommends the raising of the temperature toward the end of the digestion to 160° C. in the belief that the mechanical opening up of the pulp facilitates dispersion of the rosin and its removal in the waste liquor. When the charge is blown out of the digester a powerful disintegrating action takes place, and the rosin will be suspended in the liquor and removed by thorough washing. Although the quantity thus removed is only a small percentage of the rosin, it is the most objectionable part. Hot wash water is much more efficient than cold.

"In passing through the separator, the strong mechanical action again frees a part of the rosin and suspends it in the dilution water. When this stuff then flows over the sand tables part of the suspended rosin clings to the surface of rising air bubbles, and is carried to the top. In most works one finds wooden laths, with felt strips fastened to them, placed across the sand tables to catch and hold this froth back. But still the greater part of the rosin remains in the stuff.

"One may roughly estimate the quantity of rosin in the water from the washing drum by adding a known quantity of alum solution to a measured portion of it, and noting the cloudiness compared with a similar quantity of water containing a known quantity of rosin fat suspension and treated in the same way. As a rule, this wash water contains 1mg/1, which represents about 1 percent to 3 percent of the total rosin in the pulp.

"Several German patents recommend the addition of petroleum or hydrochloric acid in the separator, but in the small quantities used petroleum cannot have a sufficiently solvent effect. The petroleum emulsion may, however, have a slight beneficial effect by stabilizing the rosin suspension and so to some extent prevent the precipitation of the rosin. On the other hand, some say that petroleum is only harmful, as it renders the resinous matter more sticky.

"The hydrochloric acid addition is to neutralize the detrimental effects of hard waters, so does not apply to Finland; but as the chlorides are as active precipitants as the bicarbonates, their usefulness seems to be very doubtful.

"At the wet presses of the pulp drying machine also considerable quantities of rosin are removed with the outflowing water. The following table gives some idea of how much, between the first and second presses, the pulp web is warmed by two heating cylinders:

Water from	Ex'pd. water per ton of dry pulp. litres	Rosin per litre. mg	Ptge. of the total rosin removed. about
Wire and couch.....	45,000	1	0.5
First press	1,700	20	0.3
Second press	800	290	2.3
High pressure press...	400	750	3.0
Total about	...	...	6.1 p.c.

So that about 6 percent of the rosin is removed in this process.

On the drying cylinders the structure of the rosin is altered; its stickiness is reduced, and the small particles adhering to the fibers are melted firmly on to them. When again broken up in the beater, the rosin no longer goes so easily into suspension. Pulp which has been dried, therefore, seldom gives rosin troubles, but when such troubles do arise they are mostly due to prolonged beating.

Sieber has determined the reduction in the rosin content by the whole process from digestion to drying, and finds it to be 56 percent, but conditions vary greatly in different mills. Trials made at Warkaus did not confirm such a reduction. The following table gives the observed reduction. (The extracts were made with benzol and the time of each was eight hours):

Ptge. of rosin in the wood.	Ptge. of rosin in the pulp.	Reduction of rosin content as p.c. of total
0.87	1.36	21
0.85	1.35	21
0.75	1.14	24
0.72	1.36	6
0.76	1.18	22
0.74	1.21	18
Average		19 p.c.

A yield of 50 percent was used for calculation.

Experience at Warkaus shows that rosin troubles do not necessarily arise from greater rosin content in the pulp, and it appears certain that suspensible rosin plays a much greater part than the total rosin content of the pulp. As I have said, the rosin becomes suspended by the action of the beater, and more readily with moist than with dried pulp. Rosin difficulties make themselves more readily felt in mills which recover their back waters and when making unsized papers.

What Happens in the Beater

What happens in the beater is as follows: The fiber mixed with water carries a weak negative electric charge. A rosin suspension is likewise negatively charged. The rosin suspension in water has, therefore, a very small stability in the faintly acid solution and is apt to coagulate. As both fiber and the precipitated rosin particles have the same sign they have no tendency to adhere, but rather separate out, and the rosin then adheres to the sides of the beater, and is in part carried down when the stuff is emptied to the chests. The coagulation itself takes place very slowly. The greater part of the rosin passes through the wire with the water to the recovery plant, where, in consequence of the low stuff concentration, the formation of the rosin precipitate is facilitated.

As a rule, more or less sulphate of alumina is added to the beater to precipitate the size. This aluminum sulphate is, to a certain extent, dissociated in consequence of the great dilution. The positively charged aluminum hydroxide sol thus formed is absorbed by the fiber, and gives it a weak positive

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It was taken with machine operating

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charge. The suspended rosin will then become fixed on the fiber, thus preventing the formation of rosin lumps or coarse particles.

Should back water from the machine be used in the beaters, or the beater water from any other cause be acid, the dissociation of the aluminum sulphate will be delayed, in which case there might not be sufficient hydroxide formed to bind the whole of the rosin suspension, and the separation of rosin would be possible.

Many suggestions for overcoming the difficulty have been made, but before dealing with these I shall more particularly describe the form in which rosin exists in the pulp.

If one observes a sample of pulp under the microscope at an enlargement of about 250 diameters rosin lumps of varying size may be seen adhering to the fibers. But as these appear only at wide intervals, the most of the rosin must exist in a very finely divided condition. An examination of the water expressed by the high pressure press confirms this. If this is filtered through several layers of fine filter paper, an opalescent filtrate is obtained, which is coagulated by the addition of alum. Both the first filtrate and the coagulum are partly soluble in alcohol, of sticky consistency and without doubt rosin.

The rosin particles of various sizes behave differently in the beater. The larger particles may be mechanically worked together, gradually forming larger lumps, which eventually attach themselves to the sides of the beater. On the other hand, the finely suspended rosin behaves as a typical colloid and obeys the general laws for such solutions. But it is exactly this fine suspension which must be blamed for the troubles on the paper machine.

Suggested Treatment

We will now examine the theoretical possibilities of converting this suspension into forms which are not liable to make trouble in the process of papermaking. They are as follows:

1. Stabilization of the emulsion by the addition of peptizing emulsoids.

2. Adsorption of the rosin suspension on a suitable added emulsoid.

3. Fixing the suspension on the fiber.

The most generally used protective colloids are the following organic emulsoids: Gelatin, albumin, starch, glue, gum arabic, etc.

The stabilizing effect is first exerted at a concentration of about 0.004 percent, which is equal to about 700 grammes per ton of pulp when the beater concentration is 60 grams per litre, or, if using a 25 percent pulp, about 2.8 Kg. per ton. The cost of this method makes its use for this purpose impossible.

Experiments in the laboratory of the Warkaus pulp mill have shown that sulphate waste liquors exert a similar stabilizing influence on rosin suspensions. For example, an addition of 0.5 to 1 percent waste liquor of 6° Be. to a suspension containing 20 mg. of rosin per litre prevents precipitation by alum. If this should be confirmed on the manufacturing scale, and should no evils result from the use of the neutralized waste liquor, then every paper mill attached to a pulp plant will possess an easily accessible and cheap means of overcoming this difficulty.

One Finnish and several German patents deal with the difficulty by adding china clay, talc or asbestos powder to the pulp. These substances possess a considerable power of adsorbing fat emulsions. As they are precipitated by the addition of alum, they carry the rosin suspension down with them, and so protected by the china clay they lose the opportunity to aggregate together and are rendered innocuous. The old experience that a large addition of china clay to the stuff is a protection from rosin troubles has been confirmed many times at Warkaus. But this is not an infallible cure, and moreover it has its limitations, for the addition of china clay is not suitable for all classes of paper.

The third possibility at our disposal is the fixing of the rosin suspension on the fibers. As we have already said, this takes place in the normal working of the beater. The added alum is, to a certain extent, dissociated into aluminum hydroxide and sulphuric acid; the hydroxide becomes fixed on the fiber, to which it gives a positive electric charge, whereby the negatively charged rosin suspension becomes adsorbed on the fiber. Further dissociation is prevented by the increased concentration of the hydrogen ions, and a balance is established. If the hydroxide formed is insufficient for the fixation of all the rosin, the conditions favorable to the production of rosin troubles are created.

If, before the addition of the alum, alkali is added to the stuff, the establishment of a balance is delayed and the formation of more hydroxide becomes possible. This proceeding, which was patented by J. Kaustinen, was put into operation by the Warkaus pulp mills, which formerly had daily stoppages through troubles with sticky resinous matter, but has worked since then practically without any such troubles. Sporadic cases of rosin trouble could be traced to the insufficient addition of alkali.

The alkali used is lime milk and it is added to the pulp at 2 percent consistency before it is pumped over to the paper mill; there it is concentrated to 5 percent and run into the beaters. The amount of lime added is from 1 to 2 percent on the dry weight of the pulp.

But the alkalinity is advantageous on other grounds. It is known that hydroxyl ions have a strong peptizing action on fat and rosin suspensions (as free rosin in rosin size); the rosin particles most easily set free become suspended and are removed at the concentrating and drying machines. The quantity so removed is, however, so small that it cannot be detected by determining the rosin content before and after the lime treatment. Nevertheless, the following experience shows that the addition of lime to the beater is of the first importance.

As the beaters in the paper mill were undergoing reconstruction, the pulp was run over a board machine into moist rolls containing about 30 percent of dry stuff and it was filled into the beaters in this form. Although the lime addition was not altered, rosin troubles appeared on the machine immediately after the change. Most of the lime had been removed from the pulp with the backwater from the board machine, and what remained was insufficient for the purpose in view. Shortly after reverting to the old method the rosin troubles began to disappear. In many experiments with the addition of potassium carbonate to rosin suspensions in which pulp had been mixed, and then precipitating with sulphate of alumina it was proved that a certain minimum of alkali is necessary for the complete fixation of the rosin suspension; this minimum varies, of course, with the nature of the pulp and with the degree of suspension of the rosin.

The addition of the lime causes the pulp to assume a somewhat darker or browner tone. This has, however, given no trouble when dyeing the paper.

Theoretically considered, finely levigated chalk or sodium bicarbonate should have the same effect as lime milk, without affecting the color of the pulp; but this has not yet been practically demonstrated.

A microscopical examination of the pulp before and after the lime treatment, shows that in both cases the same abundance of rosin particles is present, and the color of the rosin is unchanged. An examination of the ether and alcoholic extracts also shows no chemical change or appreciable reduction of the rosin content. This supports our contention that the cause of the rosin troubles must be sought in the coagulation of the colloidal emulsion and fine suspensions, and not in the amalgamation of the larger particles attached to the fibers.

Examination of rosin from ordinary and from lime-treated pulp give the following figures:

	Ordinary pulp. Per cent.	Lime treated pulp. Per cent.
Moisture	5.10	5.01
Ash	0.29	0.34
ROSIN		
Alcoholic extract	1.37	1.27
Ether extract	0.95	0.99
Thereof in petroleum ether		
Soluble	63.5	81.7
Insoluble	35.6	17.2

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The ether extract contained		
Rosin	26.7	23.7
Fat	73.3	76.3

The theory above developed to explain the cause of rosin troubles and the experiments connected therewith are built principally upon the theories of the mechanism of rosin sizing recently developed by Heuser, Sieber, Haug and, above all, by Lorenz. These experiments were made partly with technical rosin size and partly with pure abietic acid. I have repeated the experiments, which are of interest in dealing with this subject, and have extended them by the use of suspensions of the actual suphite pulp rosin.

This theory, built upon colloidal chemical reactions, appears to me to be the only one which can supply a fairly uniform explanation of the rosin troubles and the means for their removal. New experience will doubtless lead to further understanding in the near future.

Conditioning and Testing Paper

In testing paper for strength and other physical properties it has become generally recognized that such tests must be carried out under fixed conditions of relative humidity. The most desirable procedure is the maintaining of a testing room at constant relative humidity at a definite temperature. This requires elaborate and expensive apparatus—a good automatic-control system costing several thousand dollars. Although such equipment, capable of automatically controlling the atmosphere in a room large enough to accommodate all testing equipment and the necessary operators, is highly desirable, most paper mills are without any control for humidity in testing owing to the excessive expense of the elaborate equipment.

An attempt has been made at the Bureau of Standards, Washington, to meet this condition with a small, relatively inexpensive, testing unit having humidity control. Thus far the development of the apparatus has been confined to its application to the folding test, since this test is most affected by differences in humidity.

A cabinet has been designed in which the atmosphere is kept at a constant relative humidity by means of the well-known method of exposing the air to a sulphuric acid solution of definite concentration. The specific gravity of a sulphuric acid solution is a sufficient index of its relative vapor pressure. By passing air through a sulphuric acid solution of definite concentration or specific gravity in a manner which will thoroughly expose the air to the acid solution, the air assumes a relative vapor pressure in equilibrium with that of the acid. In the present case, the air is bubbled through large bottles of acid solution through specially designed bubblers by means of an air blower which delivers about 1 cubic foot of air per minute. The whole circulatory air system forms a closed system, the same air being continuously recirculated so that once the relative humidity is established it is changed only by the moisture taken from or given to samples of paper to be tested.

In order that the introduction of samples into the testing cabinet shall not upset the constant relative humidity surrounding the testing instrument, an auxiliary conditioning chamber is provided in the outgoing air line. Samples to be tested are placed in this auxiliary conditioning chamber for a sufficient period to bring them to equilibrium with the conditioned air before they are brought into the testing cabinet proper for the folding test. The folding tester is inclosed in the air-tight cabinet and is operated by a motor situated on the outside of the cabinet, the connection being made by means of a shaft passing through a bearing in the wall of the cabinet. In order to carry out the folding test without opening the cabinet to the outside air, flexible sleeves are provided which terminate in rubber gloves. By this means, all necessary operations of inserting the test strip, adjusting the tension, starting and stopping the tester, etc., are effected almost as easily as if one were inside the cabinet.

Stable-Arc Saves Three Million Dollars

The use of the Stable-Arc welding process, developed exclusively by the Lincoln Electric Co., at Cleveland, Ohio, has guaranteed a cost reduction of three million dollars on the mammoth Oakland, Calif., water project. This project will carry the city's entire water supply ninety miles through the mountains from the Mokelumne River.

The contract for the job has been awarded the Steel Tank and Pipe Co., of West Berkeley, Calif. Before submitting its bid, the Steel Tank and Pipe Co., in conjunction with the Lincoln Electric Co., conducted extensive investigations to determine the superiority of welded connections over the lock bar or riveting methods.

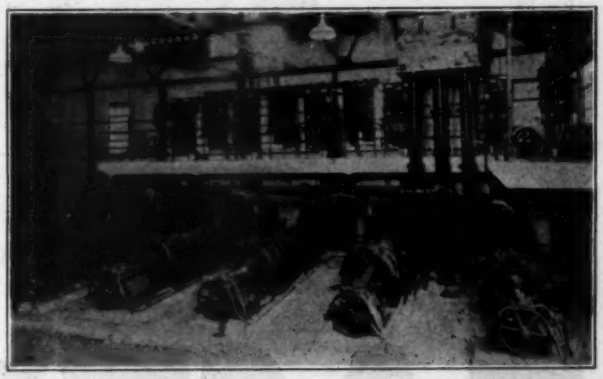
It was found that by using the Stable-Arc process a much lighter grade of steel pipe could be used, thus materially reducing steel costs. It was also determined that labor costs would be greatly lessened.

To do the work, eight specially designed automatic Stable-Arc welding machines were built in the shops of the Lincoln Electric Co., and set up in the factory at West Berkeley. After being welded by this process, the thirty-foot, sixty-five-inch diameter, steel pipe was subjected to severe tests. In one of the tests, pipe sections subjected to a tension of 4,500 pounds to the square inch were bent to a ninety-degree angle. In another, each section of the pipe was tested by hydraulic pressure to nearly the elastic limit of the steel itself. While under such pressure, every foot of the pipe was struck with a nineteen pound sledge. All tests only helped to prove the superiority of welded connections over lock bar or riveted connections.

Although the tests have been going on every day since the fifteenth of February, no signs of weakness have been discovered yet.

New Paper Mill Motor

The new type TS synchronous motors manufactured by the General Electric Company are now being used for driving pulp refiners in the paper industry. The first paper mill

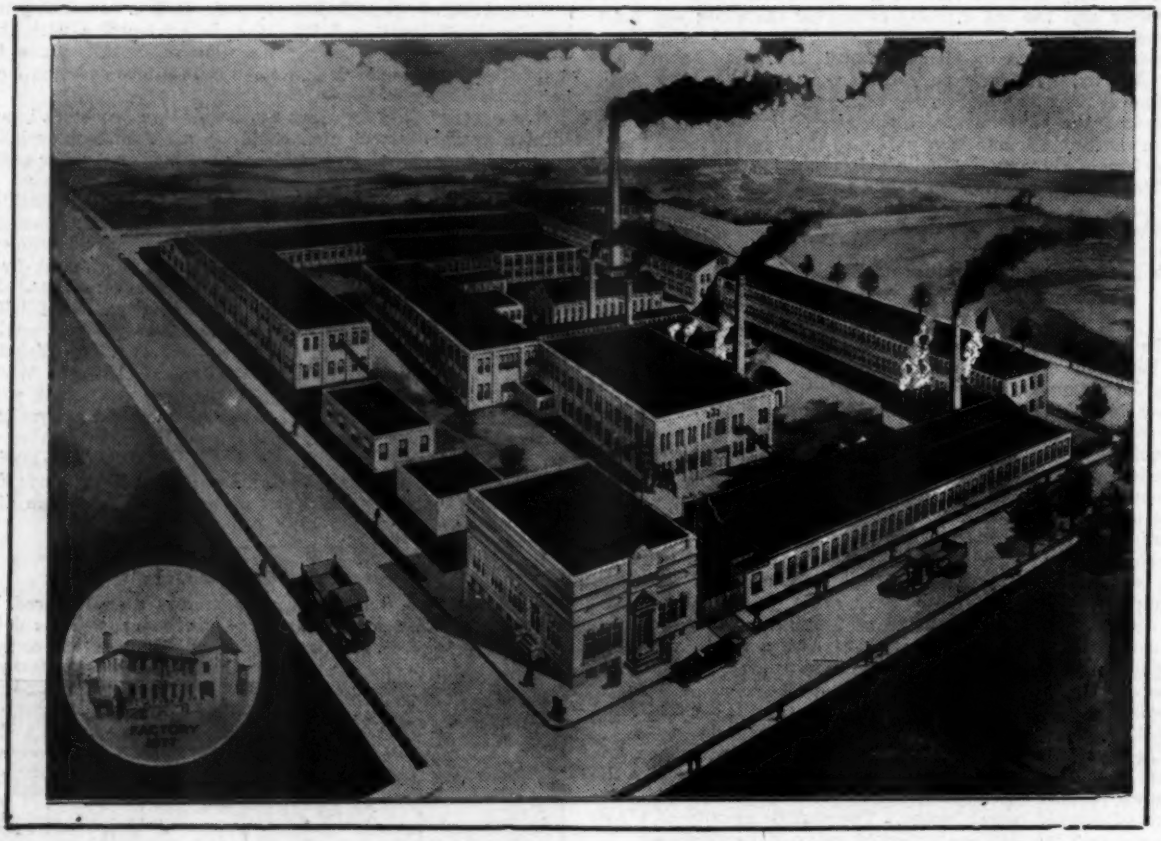


to make the application is the Albemarle Paper Manufacturing Company of Richmond, Virginia.

The accompanying photograph shows five of these motors, rated 250 horsepower, 360 r. p. m., 3 phase, 60 cycles, 220 volts, driving Shartle Bros. Miami No. 2 Jordans. The control equipment for each motor consists of a full automatic, across-the-line starter. This is found to be an advantage over manual control, as the push button can be located near the Jordan plug.

Excitation is furnished by two motor generators, either of which is of sufficient capacity to excite the entire group of motors.

Dr. J. L. A. Macdonald, chief chemist of Tullis, Russell & Co., Ltd., Markinch, Fife, Scotland, who was a guest of T. A. P. P. I. at this year's annual meeting, is reported to have been offered the position as head of the Research Institute of Canada, which is supported by the Canadian Pulp and Paper Association for investigations bearing on pulp and paper production. Doctor Macdonald served during the World War as a lieutenant-colonel with the Royal Scots, the oldest existing regiment of fighting men in the world. He is a graduate of St. Andrews University, St. Andrews, Scotland, where the ancient and royal game of golf originated.



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Canadian Section

Canadian Newsprint Controlled by Few Powerful Groups

The production and marketing of newsprint is rapidly coming under central control in Canada. The lead in this direction was given some years ago by the formation of the Canadian Export Paper Co., and various companies have since been combined under three other big groups, namely, the Holt group, the Mead group, and International Paper Co.

Canadian Export Paper handles the export sales of Laurentide, Price Bros. and Brompton, with a total daily capacity of 1,200 tons. The Holt group includes the St. Maurice Valley Corporation, Port Alfred, Canada Paper, and the St. Maurice Sales Corporation which sells also the output of the St. Lawrence Paper Mills and of the Beaver Wood Fibre Co., these companies having a daily output of 900 tons daily, which is scheduled for an increase of over 800 tons within the next twelve-month. The Geo. H. Mead Co. handles the export sales of the Abitibi, Spanish River and Fort William companies, with a total output of 1,400 tons daily, and will also see to marketing the output of the new 200-ton mill of Manitoba Paper. International Paper handles the output of its own mills, which, as far as Canada is concerned, will very shortly reach 700 tons of news a day and will probably be in the neighborhood of 2,000 tons a day within the next five years.

No Threat of Serious Newsprint Surplus

Nesbitt, Thomson & Co., prominent Montreal investment brokers, after reviewing the Canadian newsprint situation, consider it reasonable to conclude that the Canadian mills should be able to find markets right through the year that will provide an outlet for at least 90 per cent of their capacity, which far exceeds conditions in the vast majority of industries.

It seems reasonable, also, to look for a maintenance of the present price of $65.00 per ton at least for the present year, unless unexpected price cutting should be indulged in. They consider that the present period is, at worst, a transitory one, during which Canadian mills may, in their zeal for assuring themselves of future dominance, overstep prudence in creating a surplus of production. This, however, should gradually be absorbed by growing consumption, and in a comparatively brief period of time the Canadian mills should re-establish themselves in a position of steadily increasing world-wide supremacy.

According to Keith Murdock, widely known newspaper man of Melbourne, Australia, who was in Vancouver recently, that country may buy from Canada one-third to one-half of its newsprint requirements. The business will run to more than 1,000,000 pounds sterling a year, and will be one of the developments of the recent Australian-Canadian trade treaty. Mr. Murdock said that conditions in Australia were bright.

Good Program for Dominion Chemists' Convention

One of the features of the Cellulose Symposium to be held during the Dominion Convention of Chemists to be held in Montreal, May 31 to June 3rd, will be Professor Herzog's papers on "The Bearing of X-Ray Analysis on the Constitution and the Technical Application of Cellulose Derivatives" and "Recent Scientific Developments in the Field of Textile Chemistry." Professor Herzog is going to spend a couple of months at the Physics Department of McGill University, studying the application of X-Ray analysis to crystal structure.

The Dominion Convention of Chemists will be held under the auspices of The Society of Chemical Industry, the Technical Section of the Canadian Pulp and Paper Association and The Canadian Institute of Chemistry. The Cellulose Symposium will convene Wednesday morning, June 2nd, in the lecture room of the Macdonald Physics Building, McGill University; the afternoon session will meet at the Windsor Hotel.

The program consists of besides the two papers above mentioned, the following: "Some Fundamental Problems in Cellulose Chemistry," Dr. Bjarne Johnsen, Hammermill Paper Co.; "The Action of Heat on Cellulose," Prof. J. Watson Bain, Toronto University; "Fermentation Products from Cellulose," Prof. H. B. Speakman, Toronto University; "Celanese Silk—A New Canadian Industry," Dr. Pratt, British Celanese Company; "Some Problems in Wood Preservation," J. F. Harkom, Forest Prod. Lab. of Can.; "Nitro-Cellulose Lacquers," Arthur Orr, The Commercial Solvents Co.; "Nitro-Cellulose, Its Manufacture and Uses," J. Boisseau Wiesel, Hercules Powder Company.

A roundtable discussion under the chairmanship of Prof. H. O. Keay, will be held at the Windsor Hotel on the morning of June 3rd. The subjects to be discussed are (1) Sulphite Pulp Manufacture, and (2) Chemical Problems of the Paper Mill.

A public lecture will be given in the Windsor Hotel on Tuesday evening, June 1st, on the subject of "Rayon," by Dr. Benger, of DuPont Rayon Company.

British Budget Provides for Wrapping Paper Duty

The chief interest in the Churchill budget, as far as Canada is concerned, centers in new duties on wrapping paper and commercial motor cars, and a ten-year guarantee given for the continuation of all Empire preferences.

It provides for the imposition of a duty of 16⅔ per cent ad valorem on packing and wrapping papers, and an Imperial preference of one-third. Under these conditions, the Canadian wrapping paper industry is expected to broaden its market in the British Isles in competition with Scandinavia and the United States.

Newsprint production for the United States for the month of March was 145,910 tons, while for Canada it was 154,093, with the mills operating at 95.0 and 96.4 per cent of rated capacity in the respective countries. In spite of this record production, mill stocks are not increasing, showing that production is being taken up just as fast as it is coming off the machines. Mill stocks at United States and Canadian points amounted to 2.9 days' average production on March 31, 1926, as compared with 5.5 and 5.3 days' supplies on corresponding dates of 1925 and 1924, respectively. Publishers' stocks on hand and in transit show a similar reduction.

Considers Erection of Paper Industries Building

At a recent meeting of the executive council of the Canadian Pulp and Paper Association, the principal item of business was a full discussion of a resolution of the Research Section, petitioning the council to take under consideration the question of financing the construction of a new building to replace those at present occupied by the Forest Product Laboratories, at least to the extent of providing proper accommodation for the three agencies named: The Pulp and Paper Division of the Forest Products Laboratories, the Department of Industrial and Cellulose Chemistry of McGill University, and the headquarters of the Canadian Pulp and Paper Association and its associate bodies.

At the same meeting, the Secretary directed attention to a resolution passed by the Technical Section at its annual meeting, recommending that the Association should take some action to improve the apprenticeship system now in vogue in the industry. After discussion, the Secretary was

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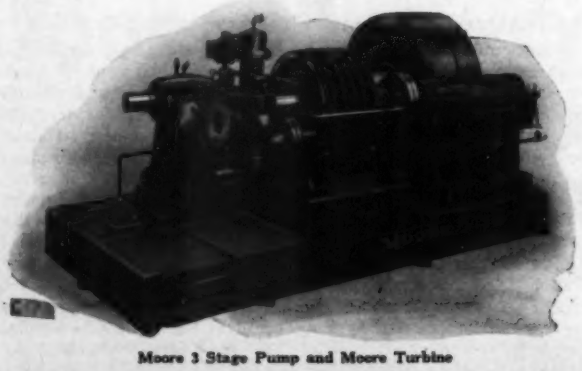

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directed to record as the sense of the meeting that the question of apprenticeship is one governed entirely by local conditions and is best handled as a local problem and not one calling for action upon the part of the Association at the present time.

Personnel Changes in Newfoundland Company

Sir Glyn West, president of the Newfoundland Power and Paper Co., and John Stadler, general manager, have resigned and will be replaced by E. Bernard Smith, who will handle both positions. H. D. Reid, vice-president, who resigned some time previously, will be succeeded by Andrew Whyte, who will assume control of the finances of the company.

John Stadler, who through his connection with the Belgo Paper Co., and later successful development of the Newfoundland Power and Paper Co. at Cornerbrook, became a figure of importance in the industry, is now reported to be interested in the Wallberg development in the Lake St. John district. Rumor also couples Mr. Stadler's name with the chairmanship of the Montreal Electrical Commission, the office left vacant by the tragic death of the late Dr. L. A. Herdt.

QUEBEC

Rapid Progress at Port Alfred

Owing to the satisfactory progress with the construction of its newsprint extensions, Port Alfred Pulp and Paper Corporation has decided to anticipate its financial requirements by the immediate issue of an additional $1,000,000 of 7 per cent cumulative preferred shares.

The corporation has now nearly completed the installation of its first two machines: the first machine, originally planned to be ready for operation in July, is now practically ready, and progress with the second machine has been equally satisfactory. Construction is also under way for the installation of the third and fourth machines, to be ready for the end of the year.

The head offices of the corporation are to be moved to the Canada Cement Building, Montreal, where it will occupy premises jointly with the St. Maurice Valley Corporation and its constituent, the Belgo-Canadian Paper Co. This move follows closely upon the appointment of Geo. M. McKee as managing director of St. Maurice Valley Corporation, Mr. McKee being also president of Port Alfred Pulp and Paper Corporation. The two companies being under the same operating control, location in the same offices will obviously make for economy in administration.

The accounting offices of the St. Maurice Division of St. Maurice Valley Corporation have been moved to Three-Rivers, thereby bringing that department into close touch with the mills.

Work is being started on the extension to the newsprint mill of Brompton Pulp and Paper Co. at Bromptonville. A 234-inch machine with a rated capacity of 100 to 110 tons of paper a day has been ordered of Charles Walmsley, and will give the company a total daily capacity of 220 tons of news.

Saguenay Power for Shawinigan

It is reported that under an agreement, the details of which have not been divulged, Shawinigan Water and Power Company to meet the requirements resulting from the tremendous industrial growth of Eastern Quebec is to obtain 100,000 horsepower from the big Saguenay development. The power will be transmitted from the Isle Maligne power house, at the Grande Décharge development, to the power house of the Quebec Power Co., subsidiary of Shawinigan Water and Power, at Quebec City. The line will be the highest voltage transmission line in Canada (150,000 volts), and one of the longest in America (150 miles).

The power will be utilized either through Quebec Power or directly distributed by Shawinigan Power. It will be specially needed for the operation of the Anglo-Canadian Pulp and Paper Mills, which are to be erected on the St. Charles River at Quebec, and most likely also for the St. Regis Paper Mills at Cap Rouge.

International Paper Extends Power Holdings

International Paper is reported to be negotiating with the Canadian Pacific Railway for the purchase of the Hull Electric Railway, a subsidiary of the C. P. R. The Hull Electric operates a tram line from Ottawa to Aylmer, Que., a distance of about nine miles, and has power development rights at Deschenes rapids on the Ottawa River above Ottawa, and at Paugan Falls on the Gatineau above Chelsea, where International Paper is at present erecting a large hydroelectric plant.

International Paper is understood to be interested only in the power rights, while the railway is unwilling to sell only these rights without the tram line as well. The paper company is therefore trying to find a purchaser for the electric line. If they are successful, they will take up their option on the Hull Electric property, which is for about $4,750,000; but otherwise the deal is hardly likely to go through.

Affiliated Engineering Companies, Ltd., have been appointed authorized selling agents in Quebec and the Maritime Provinces of the Elliott Co., of Pittsburgh, Pa., manufacturers of turbines and general power plant equipment.

It has been decided to hold the annual meeting of the Canadian Paper Box Manufacturers' Association, Inc., at the Mount Royal Hotel, Montreal, on June 28th and 29th next.

Gustave Piché, chief Forestry Engineer of the Province, is now in Rome to represent Hon. Honoré Mercier, Minister of Lands and Forests, at the International Forestry Congress. He will spend some time abroad studying matters of interest to his department.

R. J. Schadt, who has been director of research at Munising Paper Co., Munising, Mich., has been appointed superintendent of the groundwood mill of Port Alfred Pulp and Paper Corporation, Port Alfred. Mr. Schadt's home is in Seattle, Wash., and he is a graduate in chemical engineering of the University of Washington, 1923.

The Institute of Industrial Arts, Ste. Anne de Bellevue, was recently incorporated at Quebec, with no capital. It is conducting a correspondence course in pulp and paper making under the auspices of the Canadian Pulp and Paper Association.

Recent incorporations at Ottawa include Northern Paperboard Company, Montreal, with an authorized capital of $3,000,000.

Disappearance of snow in the forested areas of the province earlier than was the case last year has compelled the Provincial Department of Lands and Forests to hasten the placing of its protection personnel throughout the districts covered by timber limits.

At a recent meeting of the Woodlands Section Council it was decided to hold a summer meeting to inspect some woods operations being carried on by the Laurentide Company, Limited, in the St. Maurice Valley district, providing a sufficient number of members indicate their willingness to attend. It is proposed to engage a special car which would leave Montreal on August 16th, the trip taking an entire week.

At the regular monthly meeting of the committee appointed by the Canadian Pulp and Paper Association to advise the faculty of the School of Paper Making at Three Rivers in regard to their pulp and paper curriculum, which was held early last month, a number of points were brought up and discussed with a view to arranging the curriculum in such a manner as to give most opportnity for the men in the

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mills to follow courses applying immediately to the particular department in which they may be engaged. The principal reported that there will be about twelve or fifteen young men who have been attending the day classes and who will be looking for positions in the industry during the coming holidays, beginning about the 1st of June.

Starting on Anglo-Canadian Mill Construction

Tenders for dredging and filling work on the St. Charles River, preliminary to the erection of the new mills of the Anglo-Canadian Pulp and Paper Mills, have been opened in New York, and it is expected a large number of Canadian firms will be among the tenderers. The cost of this work is estimated at about $1,000,000 and will be completed within a few months.

It is understood that actual work on the mills will start early this month, on the return of President Frank Clarke from England, where he went to consult with the Rothermere interests in connection with the new mills. When operating at full capacity at the end of 1927, the capacity will be 500 tons.

The mills are located in the northeastern section of the city of Quebec known as Limoilou, and the wharves to be built will be located exactly at the spot where Jacques Cartier is said to have first landed in 1534.

Another Mill for International Paper?

Unconfirmed reports have it that the International Paper Co. is planning the erection of a pulp and paper mill in Levis and that recent transactions reported, which affected properties located by the St. Lawrence in the eastern section of the city will prove to be preliminary to this important development. It is said that some of the timber limits, on which International Paper took options some time ago, would be exploited for the operation of this new mill.

As is to be the case for the two large pulp and paper mills to be erected on the Quebec side of the St. Lawrence, at Limoilou and at Cap Rouge, power will likely be obtained through the Quebec Power, subsidiary of Shawinigan Water and Power, and will come from the Grande Décharge development.

Hubert Biermans is back from Europe, chiefly in connection with the sale of his interests in the Belgo Paper Co. He was connected with the industry in this country for over twenty years. He will probably return to Europe where he plans to take an active part in the development of fine papers in France. It is understood that Mr. Biermans retires from the Canadian paper trade with eight million dollars in cash, five million of which he received early in the year, while the remainder was received from the financial interests behind the St. Maurice Valley Paper Corporation in payment for various classes of securities given him a few months ago.

Two new forest reserves have recently been created by the Provincial Government, one of 2,500 square miles in the St. Maurice Valley, and the other of 1,500 square miles in the Lake St. John district along the Aschamouchouan River and in proximity to timber limits recently leased by auction. While the main object in creating these reserves is to preserve the natural resources against the ordinary exploitation carried on by private interests, another reason is also to meet the requirements of pulp and paper mills located in the vicinity should some of the interests operating in the districts where such reserves have been created be in need of timber.

Reorganization of Duke-Price Power Co.

The Aluminum Company of America, which is entering the Canadian industrial field on a large scale, has purchased a controlling interest in the Duke-Price Power Co., the organization formed by the late Jas. B. Duke and the late Sir William Price, to develop power resources on the Saguenay River.

In order to carry out the reorganization of the company, a powerful financial syndicate is offering $37,000,000 first mortgage, six per cent, sinking fund gold bonds to mature May 1st, 1966. The prospectus making the financing announcement shows that Aluminum Co. is acquiring 53½ per cent of the company's stock, Shawinigan Water & Power 20 per cent, and the remaining 26½ per cent is being retained by the Duke-Price interests.

The company has firm contracts for 330,000 horsepower out of an ultimate capacity of 540,000 and an installed capacity, including two units shortly to be completed, of 450,000.

ONTARIO

Upon the recommendation of the Hydro-Electric Power Commission of Ontario, the Provincial Government has authorized the completion of an agreement for the delivery by the Gatineau Power Company, at the interprovincial boundary in the vicinity of Ottawa, of from 230,000 to 260,000 horsepower of electric energy at a price of $15 per horsepower. Delivery will commence with a block of 80,000 horsepower in 1928. Total delivery is to be completed in 1931. The contract binding the delivery is for thirty years, dated from 1928.

Work Under Way at Kapuskasing

The extension to the sulphite mill of the Spruce Falls Company at Kapuskasing is well under way at the present time. The buildings are to be up by June 1st, and equipment in by November 1st. The groundwood and paper mill will follow in the course of the summer. It is understood that the mill is to be built at Kapuskasing and the power developments at Smoky Falls at once, and later on Devil Rapids nearer Kapuskasing will be developed.

The right of way for the railroad has been cut to Smoky Falls. The steel and ties will follow in short order. The town is growing up overnight: three-story hotels and buildings of all kinds are going up.

C. J. Baby, who has occupied the position of assistant general-manager of the Spruce Falls Co., for the past three years, has retired from the company and has been succeeded by E. S. Noble, of the Northern Canada Power Co., in Timmins. He assumed his new duties on April 1st.

The annual meeting of the Ontario Pulp and Paper Makers' Safety Association was held recently in Toronto under the chairmanship of President R. A. McInnis. In the election of officers, the old board was returned with the exception of John Black, of J. R. Booth, Ltd., Ottawa, who desired to retire. His place was taken by J. H. Albert of the same company. The re-elected directors held a meeting immediately after the general session, when R. A. McInnis and George Carruthers were re-elected president and vice-president, respectively, and A. P. Costigane was reappointed secretary-treasurer.

A. S. Woodruff, of St. Catharines, recenlty passed away in that city. He was a former president of the Lincoln Paper Mills, Merritton, of which his father was one of the incorporators.

Wage Controversies Settled

A new agreement has been entered into by Spanish River and representatives of the International Trades Union. The contract is applicable to the large force of mechanics in the employ of the company at Sault Ste. Marie, Sturgeon Falls, Espanola and Fort William. The minimum rate of wages for skilled help has been increased from 70 to 72 cents an hour, while the rate for helpers has been advanced from 59 to 60 cents. The new contract recognizes the eight-hour day, and concedes overtime rates and improvements in working conditions.

The working agreements between the various unions and the Abitibi Power and Paper Co. were settled up after three days' conference early last month and are in force until the 1st of May, 1927.

The Minnesota and Ontario Paper Company has sold $7,500,000 in bonds and notes to Halsey, Stuart & Co. and the Minnesota Loan and Trust Company, in order to proceed with its

Government without Paper

THE Rosetta Stone, engraved by order of Ptolemy Epiphanes, was an effective enough legal document in its day. For in 196 B. C., no generous supply of paper existed for the dissemination of government information. Despotic rule does not have much need for paper.

Things have changed. Taxation without representation is out of fashion. Rule without consent of the governed has a hard road to travel. Information, prompt and detailed, is expected when government makes a move that affects the welfare of citizens. Paper makes this diffusion of official information possible.

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Hammermill Paper Company

Erie, Pennsylvania

extensive expansion program. Public offering of the issues is expected to be made soon.

The contract for the new machine which will be installed at Port Arthur by the Provincial Paper Mills has been awarded to the firm of Charles Walmsley & Co., Bury, England. The machine will be 165 inches wide, driven by an electric drive made by the Harland Engineering Company. It is to be delivered by October, 1926, and running by January, 1927. The Provincial Paper Mills will also install four additional four-pocket grinders in the groundwood mill at Port Arthur.

Miller Brothers Paper Co., Glen Miller, are contemplating the erection of a dam and power house. A new finishing plant, it is expected, will be built later on.

Canadian Cellulose Co., Ltd., have been organized at Cornwall, and have been granted a Dominion charter empowering them to take over certain timber limits from C. Howard Smith. The company is also authorized to engage in the manufacture of pulp and paper products.

E. J. Zavitz, for many years chief forester of Ontario, has been appointed to the newly-created position of Deputy-Minister of Forestry, and will be in charge of reforestation and forest protection, as well as of forest research and investigation.

Canadian Pulp and Paper Products, Limited, are preparing to enter the manufacturing stage at 49 Simcoe St., Toronto, in the premises occupied by Cameron and Fraser. The company will turn out egg carriers and egg flats.

Contract Awarded for Power Transmission Line

The Backus-Brooks Co., of Minneapolis, have completed arrangements for a further step in their $10,000,000 development program on the Canadian border, when they awarded a contract for construction of a power transmission line, 110 miles long, from the La Seine River in Ontario, to Fort Frances on the Rainy River. The line will carry a voltage of 110,000 and will supply power for the large paper mill of the Fort Frances Pulp and Paper Co., controlled by the Backus-Brooks interests. It will connect the paper mill at Fort Frances with the dam and power plant which the Backus-Brooks interests will build this year on the La Seine River, about 100 miles east of the point where it empties into the Rainy River.

Digby Pulp and Paper Co., Ltd., Toronto, was formed recently, with a capital stock consisting of 8,000 shares of no par value, to manufacture lumber and pulpwood. G. H. Sedgewick, Toronto, is one of the incorporators.

The contract for the paper machine to be installed by the Thunder Bay Paper Co. in the extension to be built to their mill at Port Arthur has been let to the Beloit Iron Works, of Beloit, Wis. It is understood that this company will prepare all plans for the machine and some work, but a great deal of the work will go to the Port Arthur Shipbuilding Company, it is stated, as the Beloit Iron Works are not equipped to build all the machinery required.

Death removed a well-known figure in the paper trade in the person of David W. White, Toronto, son of the late Adam White, a noted naturalist of the British Museum. Mr. White, who was 58 years of age, emigrated to Canada 42 years ago. For twenty-one years he held a position with the Buntin Reid Paper Company, and later was connected with Brown Bros., manufacturing stationers.

The Canadian Bag Co., Ltd., Toronto, have been authorized by supplementary letters patent to reduce their capital to the sum of $683,000.

As a result of an exhaustive study of the matter and by a unanimous vote of the Mutual Interest Board of the Spanish River mills, composed of representatives of the company management and employees, a system of periodic physical examinations was inaugurated a short time ago at the company's mill at Espanola. As soon as the system is working well there, it will be extended to the mills at Sault Ste. Marie and at Sturgeon Falls. All expenses are being borne by the company.

Changes on Interlake Tissue Mills Staff

C. Nelson Gain, who for some time has been superintendent of the plant of the Canadian Vegetable Parchment Co., Merritton, has been appointed manager of manufacturing of the Interlake Tissue Mills, Merritton, succeeding Joseph Cathcart, who resigned recently. Mr. Gain, who is well known in the paper trade and has a large number of friends, was for several years superintendent of the Don Valley Paper Co., Toronto. Last year he was chairman of the Technical Section of the Canadian Pulp and Paper Association.

E. C. Martin, who has been on the sales force of Interlake for a considerable period, has been promoted to the post of manager of sales and will also continue in charge of the advertising and promotion work of the company. John Berhalter, who has been with company for about nine years as salesman, has retired, and his place has been taken by Kenneth Nichol, a practical paper maker, who has been in the mill for a number of years.

Doings at Iroquois Falls

The mill has been turning out a remarkably efficient performance for some time back, and recently broke all its previous records. During the week ending April 17th the average operating efficiency of the seven machines was 96.6 per cent, and the average daily production for the week was 529.63 tons of paper. On April 20th, the paper mill turned out 551.5 tons in the twenty-four hours. This is all the more remarkable that the mill has a rated capacity of 500 tons.

R. A. McInnis, mill manager, has left for a business trip to Europe.

A Bauer refiner has been installed in the wet room. This was originally a mining machine, which has been adapted to the pulp and paper industry, and it is being given a thorough try-out. It will look after all the groundwood railings.

A new large broke beater is being built to look after the broke from machines 6 and 7, the old ones proving too small, and a saving can be effected by having the one bigger for the two machines.

W. B. Crombie, construction engineer, has left Iroquois Falls to take charge of the work at Kapuskasing and Smoky Falls. It is understood that when this work is completed he will rejoin the Abitibi staff.

Dan Dupuis, boss machine tender, has left for Oregon City, where he has accepted a position as production superintendent of the Hawley Pulp and Paper Company's plant. It is a four machine mill, one of the machines running on news.

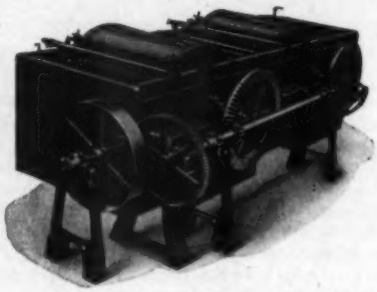
An all-steel tug, the Templeton, manufactured in Toronto, was launched a few days ago. This is the first one of its kind and is equipped with a 240-horsepower Diesel oil engine. It will be used to haul logs on the Ottawa River. It is the largest steel tug ever built for use in inland waters, being 75 feet long with a 17 foot beam.

MANITOBA

Manitoba Paper Makes Bond Issue

Manitoba Paper Company, which is building a 250-ton newsprint mill at Fort Alexander, has floated a $4,000,000 issue of first mortgage, 6½ per cent serial gold bonds. The issue is secured by assets valued at $9,835,200, including the Pine Falls water power (adjoining the newsprint mill), which is capable of developing 75,000 continuous horsepower at low cost. Development of this power site is not considered necessary at present, however, as there is an abundance of excess hydro-electric power available from other locations on the Winnipeg River.

The company is owned by the Spanish River and Abitibi



Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

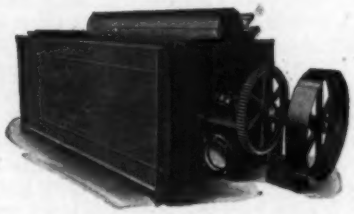
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Chemical resisting material furnished where necessary.

SEND YOUR ORDER AND GET THE BEST

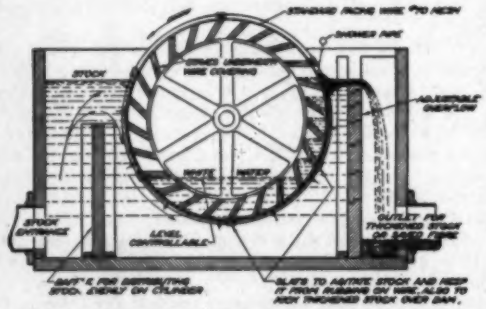


Decker and Decker Washer

A well designed, simple, reliable and compact machine to thicken or wash your stock for long periods of time without attention.

Multiple units used to give a machine of great cleaning capacity per cylinder. An ideal layout when used in conjunction with our high dry test Rogers Wet Machines.

We call on our extensive experience to solve your problems quickly and efficiently.



A. D. Wood Machine

Used as Pulp Thickeners, Savealls, Pulp Washers and Water Filters

ADVANTAGES:

Reduced Wire Costs	No Couch Roll
Enormous Capacity	Minimum Repairs
Only 2 H. P. Required	No Doctor
Works Automatically	Requires No Attention

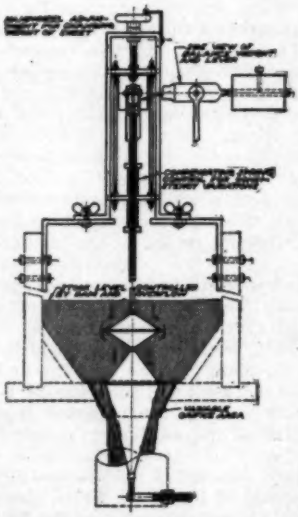
Over 150 Machines Sold and in Use

Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 30 already giving invaluable service on fast and slow speed machines, handling all kinds of stock, heavy and light. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 10 to 125 tons with equal efficiency.

Write Us Now for Details



PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

OUR LINE IS MANUFACTURED IN CANADA BY

THE NORTHERN FOUNDRY & MACHINE CO., LTD., SAULT STE. MARIE, ONT.

See pages 346 to 347 in the 1925 Paper and Pulp Mill Catalogue

companies and by financial interests immediately associated with them. Geo. H. Mead, who is president of the G. H. Mead Co. and of Spanish River Pulp and Paper Mills, is a director of Manitoba Paper. Other influential figures on the board of the new company are W. N. Hurlbut (president), Col. C. H. L. Jones, P. B. Wilson and Geo. R. Gray, all of the Spanish River Co.; Alexander Smith, president of Abitibi Power and Paper, L. R. Wilson, also of Abitibi, and J. D. McArthur and Travers Sweatman, K.C., both of Winnipeg.

The production of the mill will be marketed under contract of sale by the G. H. Mead Co., of Dayton, Ohio, which also is selling agent for Spanish River and for Abitibi. It is estimated that net earnings of the saw mill, after depreciation, will be five times the maximum annual interest requirement of the present bond issue, and approximately 3½ times the annual reserve necessary to retire both principal and interest.

NOVA SCOTIA

Otto Schierbeck has been appointed chief forester for the province under the Land Titles Act which was recently passed in the Legislature. Mr. Schierbeck, who has been associated with Frank J. D. Barnjum in forestry work in Nova Scotia for some time, is a graduate of the Danish Academy of Forestry of the University of Copenhagen, and for some years was engaged with Price Bros. & Co., going later to Nova Scotia to take a position with Mr. Barnjum. Mr. Schierbeck is a naturalized Canadian.

The MacLeod Pulp and Paper Co., Ltd., of Liverpool, N. S., which during the past few years shipped their entire production to the New England States, recently loaded the S.S. "Thyra" with groundwood for Southern France, and also shipped a cargo by the S.S. "Evviva" to Preston, England.

NEW BRUNSWICK

Development of an additional 22,000 horsepower on the Nepisiguit River will cost the Nepisiguit Power Co., a subsidiary of the Bathurst Co., $20 per horsepower delivered in Bathurst, according to a statement made by Angus McLean, president of the Bathurst Co., before the Corporations Committee of the New Brunswick Legislature, when the committee considered the bill to incorporate the Nepisiguit Power Co. with an authorized capital of $5,000,000. The bill authorizes the company to proceed with the construction of a dam and necessary works for the regulation and control of the flow of the Nepisiguit River for power purposes, at or below the mouth of the south branch of the river, approximately six miles below Nepisiguit lake.

Agreement Reached on Grand Falls Development

The agreement under which the International Paper Company will develop Grand Falls, on the St. John River, was completed at Fredericton recently, and now bears the signatures of the president of International Paper and of Fraser Companies, A. R. Graustein and Archibald Fraser, respectively.

Under the provisions of the agreement, a block of 20,000 horsepower, 13,000 primary power and 7,000 secondary power, is reserved for the Fraser Companies, which will embark in the newsprint business with the construction of a 200-ton mill on the Restigouche River, at or near Campbellton. They will construct their own transmission line from Grand Falls across the province to their mill at Campbellton.

International Paper, after providing for various reservations, will have sufficient power for the immediate establishment of a 200-ton news mill in New Brunswick; and if sufficient power is available this may be expanded or supplemented by the construction of a second mill which will give International Paper a capacity which may eventually reach 600 or 700 tons a day. Reservations include 5,000 horsepower for use in the Province of Quebec and 27,280,000 kilowatt hours dependable power for general use within the province. For the purpose of carrying on the power development at Grand Falls, a company will be incorporated in the province which will be wholly controlled by International Paper. The latter will also take out a paper manufacturing charter in New Brunswick.

The construction is to be commenced this month, and the date of completion is set for the latter part of 1928. The price of power at Grand Falls is to be $20 per continuous horsepower.

The required legislation was finally disposed of by the Legislature on April 29th when the bills incorporating the New Brunswick International Paper Co. and authorizing the Fraser Companies, Ltd., to construct a transmission line from Grand Falls, were passed, together with the bill incorporating the St. John River Power Co.

A section has been inserted in the bill of incorporation of the New Brunswick International Paper Co. to provide that, in the case of importations from the State of Maine by the company, the latter should, subject to the direction of the Lieutenant-Governor-in-Council, be permitted to export free of charge an equal quantity of unmanufactured wood cut from the Crown lands held under lease by the company.

BRITISH COLUMBIA

Expansion of Roofing Mills

The Sidney Roofing and Paper Co. are to begin the construction of a new $80,000 branch plant at Victoria for the manufacture of box board and cardboard articles. With all Western Canada as a market and New Zealand and Australia also bidding for their output, the company is considered to have excellent prospects.

A new building 120 feet long by 60 feet wide will house the new equipment. New machinery, the orders for which will be filled as largely as possible by British Columbia firms, will be installed as soon as the requisite parts are obtained. The extension will double the present output of the plant.

The management has optimistically asserted that before long it will plan additions in other directions and that even now it has purchased new land in Vancouver where changes will be made in the branch factory there.

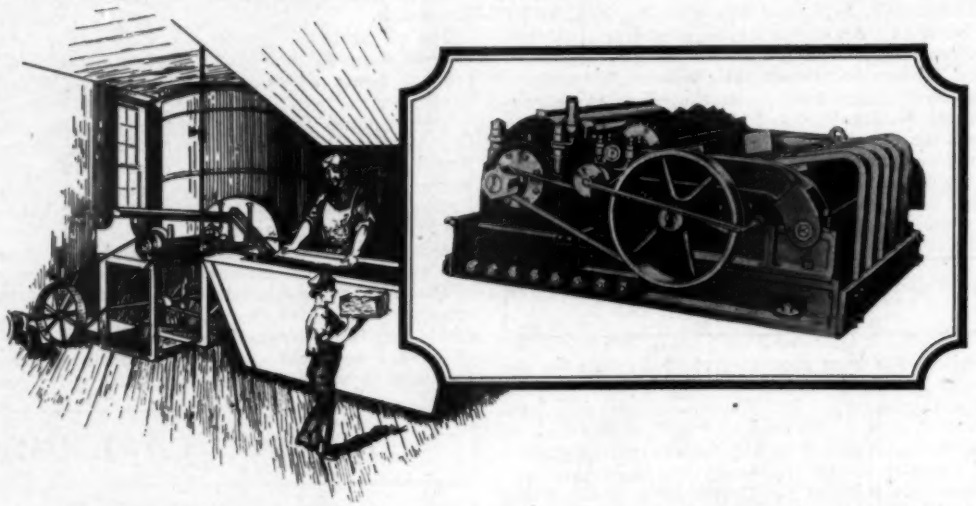
Norman Russell Lang

Succumbing to heart failure following a protracted fit of coughing, Norman Russell Lang, general manager of the Powell River Co., died in his office last month. Mr. Lang was born at Barnet, Vt., in 1866. Before coming to Canada, Mr. Lang was associated with the Crown Willamette Paper Co., of Portland, Oregon, and was a director of the Brooks-Scanlon-O'Brien Co., which operate extensively in timber in British Columbia. Taking hold of the Powell River Co. fifteen years ago, when it was in its infancy, he speedily made it one of the largest manufacturers of pulp and newsprint on the Pacific Coast.

Mr. Lang leaves a wife and daughter, and a son, Norman McKee Lang, assistant manager of the paper mills at Powell River, who was in the East on business for the company at the time of his father's death.

The Powell River Company recently sold to the Minneapolis Trust Company and the Wells-Dickey Trust Company, Minneapolis, Minn., an issue of $4,000,000 5 per cent serial gold notes, which will be used in financing the extensive additions at present under construction at Powell River.

A contract for the construction of the first unit of the plant to be established by the Canadian Scottish Paper Mills, Ltd., at New Westminster, has been let to C. F. Robinson, and work has been begun. The unit will be a one-story building, 220 feet by 56 feet, and will house the finishing room, dyeing room and offices. The site of the plant, which had reverted to the city at tax sales, was conveyed to the company by the city for a nominal price, and the industry is further being bonussed to the extent that it has been granted nominal taxation for three years.



You Can't Get 20th Century Efficiency From an Early 18th Century Design

BACK in the period when paper making was a hand process and when nothing but rag pulp was used the beater was first operated in Holland. Since these early days, all improvements to the beater have been along the lines of increased capacity—the fundamental elements of the roll and bed plate remain practically unchanged.

The beater was originally designed to draw out, brush and hydrate the rag pulp but with the development of wood pulp a new duty was forced on the beater for which it was never designed and to which its design is entirely unsuited. Wood pulp in lap or sheet form was dumped into the beater, the roll raised, and it was then forced to "chew-up" these solid masses of pulp.

Isn't it unreasonable to expect this of a roll designed for brushing and not for cutting? Also, isn't it quite reasonable to expect that this operation wastes time, labor and beater production? In many cases 25% of the total beating time is actually "chewing-up" time and aside from this there is the possibility of jumping the roll or plugging the backfall.

The Arpeko Shredder was designed to relieve the beater of this heavy "chewing-up" work. It tears the pulp laps or sheets into particles slightly larger than a postage stamp, thus allowing a denser furnish. These shredded particles have rough, open edges, which readily absorb water and quickly make a smooth mixture, whereas if they were cut instead of torn, the edges would be straight and closed and thus retard hydration. Furthermore, water is introduced at the shredding point under extremely favorable conditions, thus hydration is well advanced before the pulp leaves the shredder.

This 20th Century Efficiency is within reach and can be used to advantage by all mills, regardless of size or production, furnishing lap, sheet or roll pulp to the beaters.

Information on request—no obligation.

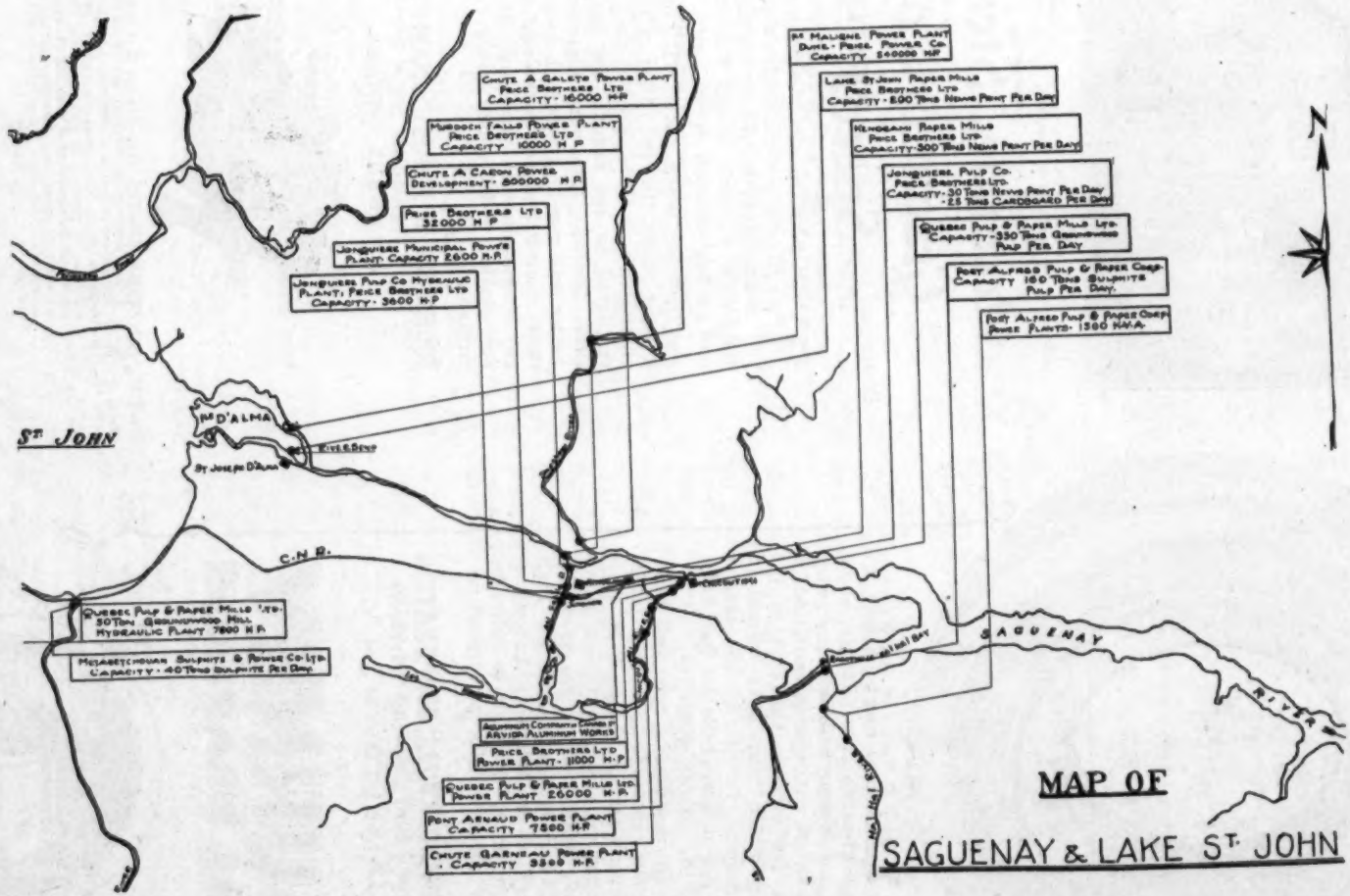
Salient Features

(1) Suitable for dry, partly dry or partly frozen, laps, sheets or rolls.
(2) 50 H. P. Motor will operate at rate of 4 dry tons of hard kraft sheets per hour.
(3) Only 5 H. P. required to start and bring up to running speed.
(4) Timken Roller Bearings insure long life and save Power, Lubricant, Time and Repairs.
(5) Revolving blades will shred 400 dry tons without changing.
(6) Blades can be removed, conditioned and replaced by one man in three hours' time.
(7) Pulp is shredded or torn, not cut, insuring easy hydration.
(8) Shredded product contains 25% water, due to shower at shredding point.

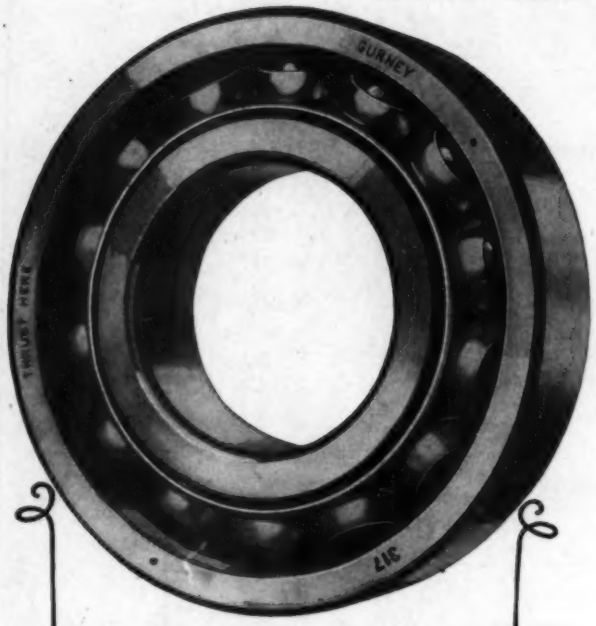
ARPEKO

Pulp Shredder ~ Chip Screen ~ Wood's Ideal Chip Breaker

RYTHER & PRINGLE CO.
Carthage, New York


Chute A Galeto Power Plant
Price Brothers Ltd
Capacity - 16000 H.P.
Murdoch Falls Power Plant
Price Brothers Ltd
Capacity 10000 H.P.
Chute A Caron Power
Development - 600000 H.P.
Price Brothers Ltd
32000 H.P.
Jonquiere Municipal Power
Plant Capacity 2600 H.P.
Jonquiere Pulp Co Hydraulic
Plant, Price Brothers Ltd
Capacity - 3600 H.P.
St. John
McD'Alma
St. Joseph D'Alma
Rivière Ouiatchouan
C.N.R.
Quebec Pulp & Paper Mills Ltd.
50 Ton Groundwood Mill.
Hydraulic Plant 7800 H.P.
Metabetchouan Sulphite & Power Co Ltd
Capacity - 40 Tons Sulphite Per Day
Aluminium Company of America
Arvida Aluminium Works
Price Brothers Ltd
Power Plant - 11000 H.P.
Quebec Pulp & Paper Mills Ltd.
Power Plant 26000 H.P.
Pont Arnaud Power Plant
Capacity 7500 H.P.
Chute Garneau Power Plant
Capacity 3500 H.P.
St. Malone Power Plant
Duke - Price Power Co.
Capacity 240000 H.P.
Lake St. John Paper Mills
Price Brothers Ltd
Capacity - 500 Tons News Print Per Day
Kenogami Paper Mills
Price Brothers Ltd
Capacity - 300 Tons News Print Per Day
Jonquiere Pulp Co.
Price Brothers Ltd.
Capacity - 30 Tons News Print Per Day
- 25 Tons Cardboard Per Day
Quebec Pulp & Paper Mills Ltd.
Capacity - 350 Tons Groundwood
Pulp Per Day
Port Alfred Pulp & Paper Corp.
Capacity 160 Tons Sulphite
Pulp Per Day.
Port Alfred Pulp & Paper Corp.
Power Plants - 1300 H.P.
Saguenay River
Lake St. John
MAP OF
SAGUENAY & LAKE St. JOHN

Courtesy—News Print Service Bureau



Paper machinery must operate six days out of seven, *continuously;* about 7,000 hours a year, and for many years. The cost of a single interruption in service far exceeds the cost of the bearing which may have caused it. This demand for troubleless service under heavy loads calls for ball bearings of the utmost reliability.

The Gurney Radial type ball bearings have succeeded notably under this severe service, because of their maximum capacity (maximum number of balls), their exceptionally rugged ball retainers, and the high standard of workmanship and material control upon which is built the Gurney reputation for performance.

MARLIN-ROCKWELL CORPORATION
Gurney Ball Bearing Division
JAMESTOWN, N.Y.

GURNEY BALL BEARINGS

1845

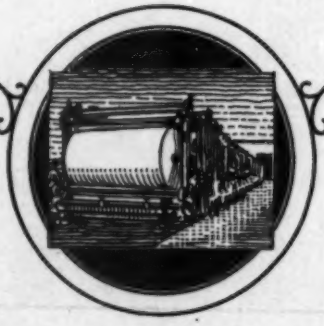


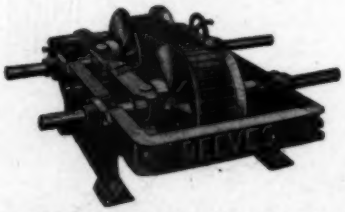
Photo shows a REEVES Transmission driving a paper cutter at the Southworth Company, Mittineague, Mass.

Accurate, Steady Gradations *of* Speeds!

THOUSANDS of paper manufacturers all over the world have eliminated waste in production by installing the REEVES Variable Speed Transmission and getting *accurate* speed control.

For instance, when a REEVES operates a paper cutter, the feed rolls run at a constant speed, and the speed of the knife is regulated to cut exactly the length of sheet desired. This simple, inexpensive device will run at any speed desired between fastest and slowest so you can cut any length sheet at any time. Send for our catalog A-66 which gives full information.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission

PACIFIC COAST NEWS

A New Puget Sound Enterprise

Plans are in the making for a new Puget Sound pulp and paper mill at Edmonds, Washington, twenty miles north of Seattle, according to officers of the Occident Pulp & Paper Mills, a company just incorporated. The company is said to be purchasing a mill property on the waterfront preparatory to establishment of a first unit of a pulp plant in operation next fall to cost about $200,000. Plans contemplate an ultimate expenditure of $2,000,000.

The new company is headed by A. E. Barry, of Seattle, a former Everett business man who has interested a number of Wisconsin, Oregon and California capitalists in the project. R. H. Bishop, of Neenah, Wis., is vice-president; S. M. French, of Portland, Ore., is secretary; J. R. Molyneux, of Los Angeles, is treasurer. R. S. Wilson, of Seattle, is the other member of the board of directors.

The enterprise is now fully financed, according to Mr. Barry, who declared that the mill building being purchased has never been used. It is 70 by 230 feet in size. Installation of the mill machinery will be directed by Mr. French, who is a construction engineer, while the plant operations will be conducted by Mr. Bishop, an experienced paper manufacturer. The company plans to make use of sawmill waste.

Fred W. Leadbetter who recently purchased the controlling stock in the Oregon Pulp and Paper Co., at Salem, Orgeon, is traveling with his wife in Europe. According to plans revealed before his departure, the board of directors will carry on a definite expansion program which calls for the erection of an addition to the present plant and the installation of a new paper manufacturing machine.

Kiwanians Hear About Paper

A. Price Dillont, of the Bulkley, Dunton Company, New York, gave a very interesting talk on paper and objects made from paper to the Kiwanis Club of South Orange, N. J., at the South Orange Field Club, on Thursday, April 29. He showed how hand-made paper was produced and explained the intricacies of present-day manufacture of paper, injecting a number of interesting demonstrations on the functioning qualities of different papers. This was done by burning sheets of paper made from guncotton, linen, rags, perfume paper, and asbestos paper. Numberous novelties were exhibited, among them being a suit of clothes made of paper such as was worn by the Germans during the war. This suit was afterwards presented to one of the members of the Kiwanis Club.

New Catalogs, Booklets, Etc.

Ernest E. Lee Co., Chicago, Ill.—"Who Serves Best, Profits Most," is the title of a condensed catalog of power plant equipment, recently received. The equipment shown is that of fourteen well known manufacturing concerns.

Dean Hill Pump Co., Anderson, Ind.—Double Suction Centrifugal Pumps are the subject of a recently issued pamphlet. The pumps are very completely described and graphically illustrated.

Metropolitan Life Insurance Co., New York City.—"First Aid Rooms in Small Pants" is the first of a series of booklets on industrial hygiene to be issued from time to time. The booklet contains some very valuable information as to the location, equipment, and type of attendant desired for the first aid room of a small plant.

The Finnish Timber and Paper Calendar—1926—. This is the first attempt at a directory published to meet the keenly felt need of a separate timber and paper calendar of Finland. The publishers have succeeded in giving quite up to date information about the timber, paper, cellulose, mechanical pulp and wood pulp board, plywood, spool and bobbin, tar and turpentine industries of Finland. The volume contains short historical notes on the development of the various industries, together with statistical tables and diagrams. The volume also contains a list of the different concerns and the various mills belonging to them, together with the names and addresses of the department managers. The book as a whole is quite complete and a valuable aid to anyone identified with the manufacture and sale of paper, boards and pulp, anywhere in the world. The price of the book postpaid is 12 shillings, and may be ordered from "The Finnish Timber and Paper Calendar," S. Esplanadgt. 2, Halsingfors.

The Brown Instrument Co., Philadelphia, Pa.—A catalog recently issued contains the newest types of pyrometers and the latest information on pyrometry. The descriptions are very clear and complete and many of the illustrations are in colors.

NORTHERN NEW YORK NEWS

The stock sheds of the Fort Orange Paper Co., of Castleton, were destroyed by fire late last month. The damage is estimated at $50,000. The fire started in the eastern end of the sheds, but before the fire department arrived the whole structure was in flames. It is thought that the fire was started by sparks from a passing locomotive.

The Bagley & Sewall Co., of Watertown, manufacturers of papermaking machines, has started night work in a number of its departments. Several new orders for machines have been received recently, making night work necessary.

Bert W. Thomas, for thirteen years assistant treasurer and office manager of the Diana Paper Co., of Harrisville, and one of the best known paper mill men in this section, has resigned his position to become associated with the Carthage Paper Board Co., Inc., of Carthage, successor to the old Carthage Sulphite Pulp and Paper Co. He assumed his position today as office manager of the Carthage plant. He was appointed to that position at a recent reorganization of the company.

A quiet boom is being started among paper mill men in this section to support Homer E. Stafford, formerly of the Knowlton Bros. mill in this city, for the presidency of the American Pulp and Paper Mill Superintendents' Association, at the convention to be held in Detroit next month. Mr. Stafford is now general superintendent of the Hawthorne Paper Co., of Kalamazoo, Mich. He is first vice-president of the Association.

F. A. Briggs Goes to Tissue Mills

Frank A. Briggs, for many years a well known papermaker of Watertown, is to become assistant superintendent of the Hartford Tissue Mills, at Burnside, Conn. The mills, which had been idle for more than a year, were recently purchased by the Cottondex Products Co., of Hartford, and will be placed in operation.

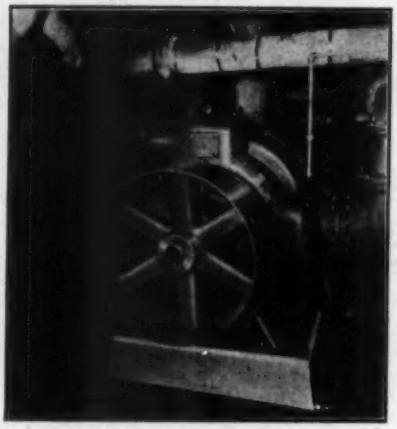
For twenty years, Mr. Briggs was superintendent of the Aldrich Paper Co. plant at Natural Dam, and since then he has been for some time president of the Frank A. Briggs Paper Co., of Syracuse. In addition to being assistant superintendent, Mr. Briggs will be a member of the board of directors. Thomas F. Dickson, a director of the company, was one time superintendent of the Newton Falls Paper Co. The Hartford mills will operate two machines.

The Albany Perforated Wrapping Paper Co., of Albany, will build a new warehouse building. The new building will be one story high and will have foundations sufficiently strong to carry another story if desired. The building will be completed within 60 working days and work has already been started. It will be 190 feet by 150 feet.

High Water in Northern New York

Practically every paper mill in northern New York was inconvenienced by the high water during the week of April 25. Black river broke high water records for several years and

Promotes convenient arrangement of machinery



Nash Vacuum Pump, operating on suction couch roll of No. 3 paper machine at Eastern Mfg. Co., So. Brewer, Me.

Here is one of several Nash Hytor Vacuum Pumps in use at the Eastern Manufacturing Company.

Because of its improved design, a Hytor occupies little floor space in comparison with other equipment of equivalent capacity. It can be installed in any desired location, even in out-of-way places, thereby obtaining a convenient arrangement of plant machinery.

Economy of floor space is only one of many exclusive Hytor advantages. For others, write for Bulletin No. 10.

NASH ENGINEERING COMPANY

So. Norwalk **Connecticut**

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., Room 1524 Republic Bldg., Chicago, Ill.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

DRY PAPER EFFICIENTLY
The Fulton Dryer Drainage System

—Increased production
—Decreased steam pressure on the dryers
—Reduced steam cost for drying

Better Sheet—Better Finish—Less Shrinkage

—and cockling prevented by drying with graduated temperature — Less pressure or vacuum on paper machine dryers.

We will gladly refer you to mills using the Fulton System and making the same grade of paper as you. They will tell you their experience with the Fulton System.

U. S. Patents Dec. 10, 1919, and June 7, 1921. Canadian Patents July 6, 1920, also patents pending.

Fulton Engineering Co.
MIDDLETOWN, OHIO

The Beveridge Supply Co., Ltd., 628 St. Paul St. W., Montreal, Canadian Representatives

most of the mills along its bank were compelled to shut down. The water was several feet above normal and some of the city streets were under water. The crest of the flood was reached Monday, April 26.

On the eastern side of the Adirondacks similar conditions prevailed. The Hudson, Schroon, Saranac, Ausable and other rivers overflowed their banks. The flood was caused by the great accumulation of snow in the woods which was melted by a sudden warm spell. There is still a great amount of snow in the woods, but it is believed that the worst of the high water is now over.

T. Minagawa and Todahika Kido, Japanese, visited the Bagley & Sewall Co. plant last month. Mr. Minagawa is conneced with Okura & Co., exporters of New York City, which handles the majority of orders for Japanese paper mills.

St. Regis Floats Bond Issue

A $5,000,000 issue of five-year, 6 per cent gold debentures of the St. Regis Paper Co. was offered April 30. Proceeds of the issue are to be used for retiring current indebtedenss to acquire additional pulpwood reserves and for other corporate purposes. This issue will constitute the only funded indebtedness of the company.

The St. Regis company is one of the largest paper manufacturing concerns in the East. It has an annual output of over 140,000 tons of paper of various grades in its mills in northern New York. Earnings for the calendar year of 1925 showed a gross income of $9,175,651, and a net income available for interest after depreciation but before the federal tax of $1,209,882. The St. Regis company owns 727,660 shares of the common stock of the Northeastern Power Corporation, which in turn owns over 99 per cent of the common stock of the Power Corporation of York, the entire capital stock of the Oswego River Power Corporation and 234,289 common shares of the New England Power Corporation.

Two improvements in the Fourdrinier papermaking machine have just been registered in the United States patent office by Frank W. Monaghan of Watertown. One of the inventions is an improved couch roll and the other a slice and breast roll. Both patents have been assigned to the Bagley & Sewall Company.

The Ontario Specialties, Inc., of Watertown, has served a notice of appeal to the appellate division from a recent court decision setting aside the summons and complaint in its action against the Old Dominion Paper Co., of Richmond, Va. The action was brought to recover $2,325, the value of a carload of paper sold by the plaintiff to the defendant prior to Oct. 22, 1925. The paper was sold by the defendant to the board of education of Boston. The defendant claimed that the paper was not what was required by the purchaser, but failed to send it back and refused to pay for it.

The felt on one of the big dryer machines of the Gould Paper Co., of Lyons Falls, was burned on the morning of April 12, causing a loss of about $500. Fire is believed to have started from a hot box. The machine was closed down for one day.

Shipments have been started from the New York State nurseries. Orders are already on file at the Saratoga nursery for 7,000,000 trees and orders at the Lake Clear and Lowville nurseries are for 6,000,000 trees. Planting was delayed owing to the lateness of the spring.

The roof of one of the buildings of the Continental Paper Bag Company, Watertown, is to be raised several feet at a cost of $20,000. The addition is for the purpose of providing more storage room.

Frank W. Warren, paper mill engineer with offices in Paris and London, is in this country on a business trip. While here he visited relatives in Watertown. For several years, Mr. Warren has been recognized as one of the leading pulp and paper mill experts of the world and has been called into frequent consultation by many of the large paper companies of the United States, France, England, Germany and the Scandinavian countries. He resides in Paris and for several years was identified with the Petit Parisienne mill, but for the past ten years he has devoted himself to consultation work.

The real estate and water power rights of the Dutcher Machine Company, of Fulton, have been sold to the Victoria Paper Mills Company.

The Partlow Lumber Company, owned by Harry Gould of Lyons Falls, president of the Gould Paper Company, and John Johnson of Port Leyden, has contracted with T. C. Williams of Hermon to cut and deliver at the railroad 20,000 feet of pulpwood and about 7,000,000 feet of hardwood from Nehasne park. The cutting will be extended over a two year period.

Officers of the International Brotherhood of Paper Makers have during the last month finished up negotiations for wage contracts.

A steadily increasing volume of business has necessitated another addition to the plant of the U. S. Gutta Percha Paint Co., Providence, R. I., makers of the well-known Barreled Sunlight. This addition maintains the record of a major building operation every other year during twenty years' occupancy of the present site in Providence.

The largest percentage of stockholders in the history of the company were represented either in person or by proxy at the annual meeting of the International Paper Company at Corinth, N. Y., on April 28. Of the 629,854 shares outstanding, 514,696 were represented.

New directors elected at the meeting were Floyd G. Simmons and Edward E. Adams.

Heavy Duty Elevating Platform Truck

A new elevating platform truck, designed primarily to carry unusually heavy loads, has been recently brought out by the Yale & Towne Mfg. Co., of Stamford, Conn., and is designated as Yale K23E.

Although not of the high lift type, the machine does embody the self-loading feature. The narrow width and the short turning radius make it especially adaptable for driving in and out of box cars and narrow aisles.

The truck is made with heavy pressed steel frame members and extra large elevating links to insure safety in carrying extra heavy loads. The elevating platform is raised and lowered by means of two large eccentrics mounted on the hoist unit shaft, which draw the platform forward and upward on the platform links. Mechanical upper and lower stops are provided for simplicity and safety in operation of the lifting mechanism.

The control of the Yale K23E truck is said to be "simple, positive, and direct."

Light, strong, adaptable pipe
—made of copper-bearing steel

THE easy installation and ready adaptability of Taylor Spiral Riveted Pipe are not its only advantages. It is assured of long life under the most adverse conditions. The spiral seam and forged steel flanges give the pipe line structural strength. The pipe material itself is copper-bearing steel covered by a hot-dip galvanizing or asphalt immersion—corrosion-resistant material coated with a heavy protective cover.

Taylor Spiral Riveted Pipe fitted with Taylor Forged Steel Flanges is supplied in lengths to suit your individual requirements. A wide range of fittings is available to simplify the most intricate paper mill layout. Pipe diameters range from 3 to 42 inches. Every length is tested hydraulically in excess of the specified working pressure.

Taylor Forged Steel Flanges for pipe lines, tanks, and boilers—faced, drilled, and threaded ready for installation—are available for immediate shipment from a large, complete stock.

Write for the new Flange Catalog and the big "Production Book" showing many applications of Taylor Spiral Riveted Pipe. See page 307 in the 1925 Paper & Pulp Mill Catalog.

AMERICAN SPIRAL PIPE WORKS
Main Office and Works: Box 485, Chicago, Illinois
New York Office: 50 Church Street

TAYLOR
Spiral Riveted
PIPE

Note these Advantages:

(1) The riveted spiral seam for greater strength and stiffness without increased weight. Riveting is by compression under enormous pressure — not by hammering.

(2) The forged steel flange — practically unbreakable. It can be more securely riveted to the pipe, eliminating leakage. It cannot be broken in shipment, during installation or in service.

PI5-Gray

NEW YORK CITY NEWS

Paper House to Remove

On or about July 1, the Royal Card and Paper Company, one of the large and well known jobbing concerns in the metropolitan district, will remove from its present quarters at 134 West Fourteenth street to the Zinn Building at the southeast corner of Eleventh avenue and Twenty-fifth street, New York, which has been purchased for its occupancy.

The Zinn Building, a big and modern structure, 100x100 feet, with eleven floors, is particularly adapted for an ideal paper warehouse. The weight capacity of each floor is 250 pounds to the square foot, thus permitting capacity storage. The building is equipped with two freight and a passenger elevator, and has a private truck loading platform on the Twenty-fifth street side which will facilitate the quick handling and dispatch of shipments. The location of the building is directly across from the New York freight terminals of practically all railroad lines leading into the city, and access to New Jersey is had via the Twenty-third street ferry almost at the door.

The company plans to house all of its stock under the one roof in its new building, thereby eliminating delays in filling orders from warehouse stocks. The sales department, envelope factory and fancy paper manufacturing department will be given much more space to take care of their increasing operations.

Joseph Haas, of Haas Brothers, paper dealers and importers, of 154 Nassau street, New York, sailed a few days ago on the steamer Nieuw Amsterdam for a several months' stay in Europe. During his visit abroad Mr. Haas plans to extend the foreign connections of his organization.

Chester W. Lyman

Chester Wolcott Lyman, former vice-president of the International Paper Company and for more than 40 years prominently identified with the paper manufacturing industry, died on April 7 in the Massachusetts General Hospital in Boston, at the age of 64 years. Mr. Lyman lived at 70 West Forty-ninth street, New York, and had offices at 100 East Forty-second street, New York. Funeral services were held at the home of his sister, Mrs. Frank Chamberlain Porter, in New Haven, Conn.

Mr. Lyman was born in New Haven, a son of Chester Smith Lyman, for many years a professor in the Sheffield Scientific School. He graduated from Yale in 1882 after going to the grammar schools in New Haven, and played on the Yale 'varsity elevens of 1878 and 1879. After a period of employment with the United States Coast Survey, he came to New York and started his career in the paper industry, going with the firm of W. H. Parsons & Co. In 1890 he joined the Herkimer Paper Company at Herkimer, N. Y., of which he became manager and a director. On the absorption of this mill by the International Paper Company in 1898, he formed his long connection with the latter organization, first as assistant to the president. He was made vice-president in 1916, which post he retained until his retirement from active business about a year ago. He also was a director of the I. P., and continued until his death a director of the Continental Paper and Bag Mills. He belonged to the American Forestry Association, Sons of the American Revolution, University, Yale, Piping Rock and Midday Clubs. His membership in the American Institute of Electric Engineers recalls the fact that in 1895 Yale University awarded to him the degree of M. A. for special studies in electricity. He is survived by a widow and a daughter.

Percy B. Wilson, vice-president of the Spanish River Pulp and Paper Mills, Ltd., vice-president of the Fort William Paper Company, Ltd., and chairman of the executive committee of the News Print Service Bureau, sailed from New York on the steamer Empress of Scotland April 13 for Rome, Italy, where he will represent the News Print Service Bureau at the International Forestry Conference, April 29 to May 5. Following the convention, Mr. Wilson and his wife and daughter, who accompany him abroad, will visit some of the interesting places in Europe, and expect to embark for home some time in July.

Schedules in bankruptcy were filed on March 30 by Peter H. Reilly & Brother, Inc., dealers in wall paper, of 106 Seventh avenue, New York, showing liabilities of $56,714 and assets of $33,300, main items of which are stock, $20,000, and accounts, $13,000. The principal creditors are the estate of Walter M. Hogan (assigned to Peter H. Reilly), $6,649; York Card and Paper Company, $5,933; Imperial Wall Paper Company, $5,149; Beaudry Wall Paper Company, $3,251; J. E. Gledhill & Sons, $2,635, and Robert F. Hobbs, Inc., $2,396.

The Bishop Paper Company, Inc., paper merchants of 541 Pearl street, New York, has filed notice of an increase in its capital stock from 500 shares of $100 value each to 750 shares of common stock of no par value.

H. B. Franks, purchasing agent in Europe for Castle & Overton, Inc., of 200 Fifth avenue, New York, with offices at 4 Callum street, London, E. C. 3, is visiting the New York headquarters of his concern and will remain in this country for about a month. Mr. Franks returns after 20 years abroad and he expresses amazement at the vast changes noted since he left. He plans to visit his mother in Newark, Ohio, and will also call on some of the western paper mills with a view to securing information on requirements of these manufacturers as to foreign packing of rags and paper stock.

D. F. Coots, who for several years has been connected with the New York sales staff of the Whiting Paper Company, has been appointed manager of the Whiting branch in Philadelphia, to fill the vacancy caused by the death of George D. Lapham. Mr. Coots has been associated with the Whiting organization for more than 12 years in the Boston and New York offices.

The Whaling Waste Products Company, Inc., importers of and dealers in rags, fibre wastes and papermaking specialties, has removed its offices from 290 Broadway to the Stewart Building at 280 Broadway, New York, where larger quarters are occupied in Suite 625.

The Lewmar Paper Company, wholesale distributors of printing papers, of 72 Clinton street, Newark, N. J., have leased for a long term of years the lower portion of the building at 72-76 Mechanic street, Newark, and after improvements are made will remove to the new address, where it will have approximately 12,000 square feet of floor space.

During a visit to Pinehurst, N. C., recently, Harold C. Levett, treasurer of the firm of Miller, Tompkins & Co., manufacturers of paper bags, of 16 Debrosses street, New York, and a member of the Ardsley Golf Club, of Ardsley-on-the-Hudson, made the fifth hole on the No. 3 course in one shot. The drive measured 221 yards. Playing with the new member of the hole-in-one club at the time was A. P. Hawley, a clubmate, and two other golfers.

The Mathieson Alkali Works (Inc.) of New York City announce the appointment of Mr. Wm. A. Field, formerly of the St. Louis territory, as Chicago District Sales Manager with offices at 310 S. Michigan Ave., Chicago, to succeed Mr. J. B. Peake, resigned. Also Mr. Frederick H. Lovenberg, formerly attached to the New York sales office, is to take charge of the St. Louis district sales office.

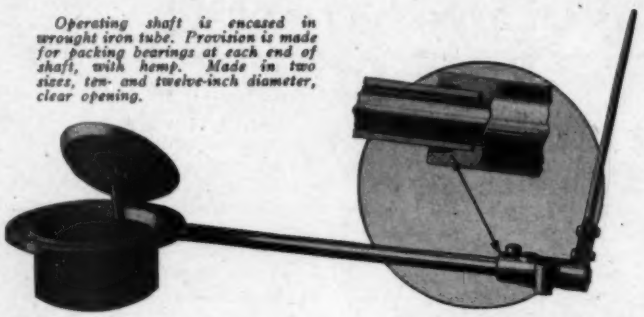
The Philadelphia Gear Works, Philadelphia, manufacturers of all types and sizes of gears for over forty years, are receiving very favorable comments regarding their complete line of speed reduction units. This line consists of the following types: worm, spur, herringbone and spiral, bevel herringbone, offering straight line, right angle or vertical drives in any ratios.

From the Outside—

No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate **from the outside** of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



DAYTON GLOBE IRON WORKS, **Dayton, Ohio**

BALL BEARING PUMPS

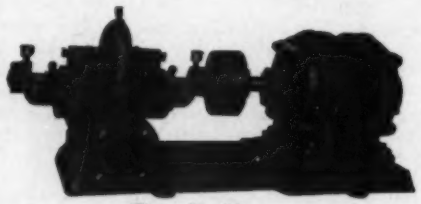


Figure No. 537

"Weinman" type "L.L.B," ball bearing, double suction, centrifugal pump, directly connected to electric motor with flexible coupling.

The logical improvement in pump design applied to

Centrifugal Pumps

The progressive papermaker's choice for all mill purposes

The Weinman Pump Mfg. Co.

270 Spruce Street Columbus, Ohio

Branch Office and Warehouse: 210 Second Ave., Pittsburgh, Pa.

The Weinman Line

- Boiler feed pumps
- Bilge water pumps
- Paper stock pumps
- Lime water pumps
- Hot well pumps
- White water pumps
- Groundwood pumps
- Sulphite pumps

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST PAPER CO.
Cloquet, Minn.

NON-FOAMING

MAXIMUM STEAM ECONOMY

NO ENTRAINMENT

SODA and SULPHATE PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 316 in the 1925 Paper and Pulp Mill Catalogue

NEW ENGLAND NEWS

Seeking Control of Army Base Piers

Several outstanding events have taken place during the past month in New England. Of great interest at the present time is the move under way by a group of Boston capitalists headed by Herbert J. Ham, custom house broker, who handles the bulk of the wood pulp and china clay imported here, to secure control of the splendid Army Base piers and wharf sheds at South Boston, Mass. At present this base is under lease to a Philadelphia corporation, and according to the Boston group it is being mismanaged to such an extent that during a period of thirteen months' operations it returned a net revenue to the Federal Government of less than $3,000. Business is being discouraged and according to officials is actually being driven away from this port.

Army base property which Mr. Ham desires to secure on lease comprises a landing platform three-quarters of a mile long and capable of unloading nine steamers at one time, wharf sheds 1,638 feet and 924 feet long respectively and containing 1,651,000 and 580,000 square feet of storage space. It is served by the New Haven Railroad. Mr. Ham and his backers have a file of testimonial letters from such representative concerns as the American Writing Paper Co., American Tissue Mills, Scandinavian Pulp Agency, Castle & Overton, Nashua River Paper Co., Fitchburg Paper Co., English China Clay Sales Corp., Union Bag & Paper Co., Association of American Woodpulp Importers, Tileston & Hollingsworth Co., and Perkins Goodwin Co. These concerns strongly support Mr. Ham in his efforts to secure the lease to the base. Several of them are enthusiastic over the proposition, declaring that the instant the lease in favor of the Boston group is signed they will immediately increase their shipments of woodpulp and rags to Boston by many thousand tons annually. Mr. Ham is confident that he can increase the pulp and clay movement through Boston by from 50,000 to 100,000 tons annually and this is considered a conservative estimate. The lease to the base at present held by the Atlantic Tidewater Terminal Co. runs to 1928, but has clauses permitting abrogation under conditions such as Mr. Ham and his associates believe now exist. The return to the Government at present is, practically speaking, nothing, and moreover very little or nothing is being spent on repairs. Mr. Ham and his associates, who include some of the leading financial interests of Boston, will guarantee the Government a minimum of $50,000 annually in addition to the 66 2/3 per cent clause in the present lease. He is at present in Washington conferring with members of the Shipping Board and it is expected that action will result in the near future.

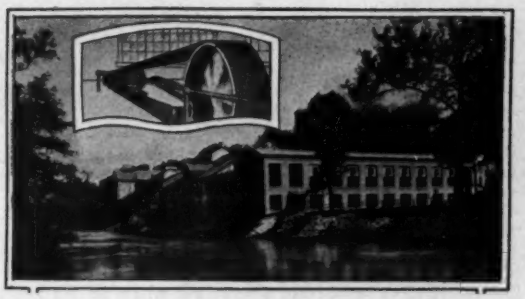
It means much to New England paper mills. At present Boston suffers because thousands of feet of space at the base are unused owing to the stringent restrictions on free time. Pulp importers declare that Boston could be made into a splendid spot market for pulp in view of the tremendous paper mill area within a radius of 150 miles of the city, probably the greatest foreign pulp-consuming territory within a similar area in the world.

A hearing was held at the Federal Building, Boston, Mass., on May 4th before an I. C. C. examiner on the proposed increased rates on the Boston & Maine Railroad on papermaking chemicals, including talc, china clay, soda ash, satin white, and on waste paper. New England Paper & Traffic Association is opposing the advance, which affects not only imported clays but sulphur from Texas and Louisiana and waste paper from England and California, the latter moving in steadily increasing amounts via the Panama Canal to Boston.

British General Strike and China Clay

Practically 90 per cent of all the china clay used in the paper mills of New England comes from Fouey, England, and if the general strike which went into effect in Great Britain on May 3 continues for any length of time, New England paper mills would be bare of clay supplies, for the

RHOADS
Tannate Leather Belting



Longer Life and Stronger Pull

AS WE are all interested in lower production costs, Rhoads Watershed Tannate has a strong appeal. It lasts much longer and it transmits more power on hard drives than most belts.

In a Pennsylvania paper mill, a 12-inch double Watershed Tannate on a hard pump drive has outlasted the previous belt nearly four times. This mill now has several Tannate Belts and expects soon to install another.

Rhoads Watershed Tannate Belts are dependable far above the average on hard drives, wet or dry; and are backed by the Rhoads Service Guarantee.

Send for new Rhoads Belt User's Book
Seventh edition now ready. Free

Use Rhoads Tannate Lace Leather
It outlasts rawhide three to five times

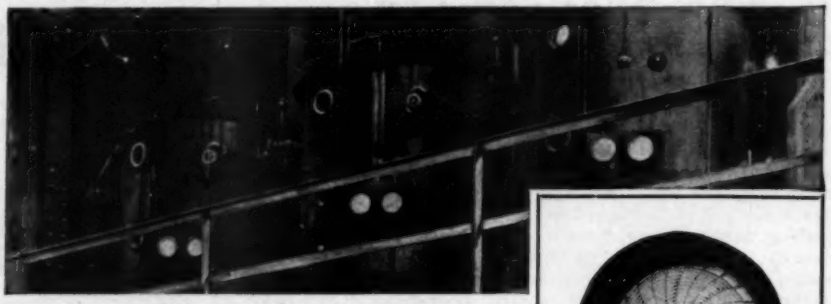
J. E. RHOADS & SONS

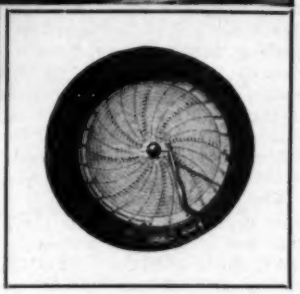
PHILADELPHIA.....47 North Sixth Street
NEW YORK.....112 Beekman Street
CHICAGO.....334 West Randolph Street
ATLANTA.....80 South Forsyth Street
CLEVELAND.....1234 W. Ninth Street

Factory and Tannery: Wilmington, Del.

TANNATE
TRADE MARK

STEAM SAVING *in* The Soda Pulp Mill





Recovery of the soda used in cooking the wood chips, is essential to the commercial existence of the Soda Process for producing chemical fiber. Even so, and under the most favorable condition, recoveries seldom run higher than 90 per cent. It follows that all engineering effort is bent toward the most efficient recovery possible.

Evaporation of the black liquor is accomplished under vacuum, in multiple effect apparatus, because—the lower the pressure, the smaller the quantity of steam needed to do the work. Proper care makes possible a very material steam-saving. Economy and efficiency of process are more readily controlled when an instrument such as

BRISTOL'S RECORDING VACUUM GAUGE

provides a continuous chart of vacuum readings. A "BRISTOL'S" vigilance is unceasing —its accuracy, permanent.

Note that, by way of simplifying construction and facilitating operation, the penarm is attached direct to the pressure element.

Our engineers gladly will furnish you with authoritative information on the use of Vacuum and Pressure Gauges for use in the Pulp and Paper industry. Bristol's Gauges cover all ranges from full vacuum to 12,000 pounds pressure per square inch.

BRISTOL'S

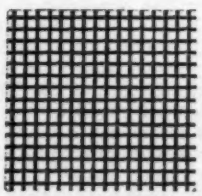
The most extensive line of recording instruments, including: Pressure, Liquid Level, Temperature, Electricity, Motion, Speed, Humidity, etc. Also indicating instruments, and a wide range of temperature control equipment. Ask for our catalogs.

The Bristol Company *Waterbury, Connecticut*

FOR 36 YEARS — Ask Any Technical Engineer — MAKERS OF

BRISTOL'S RECORDING INSTRUMENTS

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.

Also

CYLINDER FACES
WASHER WIRES
and CORDUROY CLOTH

THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.

maximum carried by any of them is one month's stocks, and several are not supplied beyond a fortnight's operations.

As a precautionary measure, therefore, C. L. Whittemore, traffic manager of the New England Paper & Pulp Traffic Association, obtained from his 26 mills data on their stocks of clay and then informed G. C. Randall, New England manager of the Car Service Division of the American Railway Association, of these facts. He outlined to Mr. Randall the need for prompt movement of clay from Georgia and South Carolina pits in case the English supply failed. Mr. Randall immediately notified the railroads in the southeast and received assurance of an adequate car supply and quick movement in case the need for diversion to American clays should arise.

Creditors of the William A. Cole Paper Co., of Putney, Vt., which has been in financial difficulties and recently reorganized, have approved payment of 25 per cent on back claims against the company, and most of these claims have now been paid. The Cole company makes tissue paper and under its new management expects to operate profitably.

Fitchburg Powdered Coal Installation

The powdered coal installation of the Fitchburg Paper Co., at Fitchburg, Mass., which has now been in operation for several weeks, is giving great satisfaction. The installation consists of three No. 1 Erie City Unitype pulverizers. These pulverizers serve three horizontal boilers, all three being set in one battery and each boiler has its individual pulverizer.

The pulverizers replace stokers. Coal is supplied to the hoppers from overhead storage by means of a weigh larry, so that an accurate account of coal consumption is recorded. The installation is modern in every respect. From the operating records available, it is said that the results are exceeding the guarantees of the manufacturers.

One machine in the mills of the Tidewater Paper Board Co., of Norwich, Conn., formerly the Uncas Paper Board Co., has been put in operation.

Mill supply dealers who have been averse to selling the American Writing Paper Co., since its receivership are so impressed with the favorable operating reports that are received by the creditors' committee that they are now not only glad to extend credit but are soliciting orders from the big Holyoke manufacturer.

The wage agreement between representatives of the International Brotherhood of Paper Makers and the St. Croix and Great Northern Paper Companies was negotiated satisfactorily to both parties early in April.

The increases proposed on sixth and fifth class commodities from New England to trunk line territory and within New England by the Boston & Maine and the New York, New Haven & Hartford Railroad are being opposed at hearings in Washington by P. J. Dowd, manager of the Holyoke traffic bureau. Fine paper made in the Holyoke district moves sixth class.

The Holyoke Power Co. is offering a reward of $500 for information leading to the arrest of persons who tampered with its feed wires on April 28th, causing temporary shutdown of two plants of the American Writing Paper Co.

Newsprint manufacturers are interested in the founding of a new evening paper in Portland, Me., to be known as the Star. It is backed by prominent Maine capital.

Joseph Warren, mill manager of the S. D. Warren Co., at Cumberland Mills, Me., speaking before the Kiwanis Club of Westbrook, declared strongly against the policy of Maine in refusing to export power. He also stated that the cost of developing water power was frequently greater than steam and that it was often more costly to operate, especially where mills such as paper manufacturers are concerned with 24-hour operations. Mr. Warren is a thorough-going student of

Oakite Service Men, cleaning specialists, are located at

Albany
Allentown, Pa.
*Atlanta, Ga.
Baltimore
*Boston
Bridgeport
*Brooklyn
Buffalo
Camden
Canton, O.
Charlotte, N. C.
*Chicago
*Cincinnati
*Cleveland
*Columbus
*Dallas
*Davenport
*Dayton
*Denver
*Des Moines
*Detroit
Erie
Flint, Mich.
*Grand Rapids
Harrisburg
Hartford
*Indianapolis
*Kansas City
*Los Angeles
Louisville, Ky.
*Milwaukee
*Minneapolis
*Montreal
Newark
New Haven
*New York
*Oakland, Cal.
Peoria
Philadelphia
*Pittsburgh
*Portland, Ore.
Providence
Reading
*Rochester
Rockford
Rock Island
*San Francisco
*Seattle
*St. Louis
Syracuse
*Toledo
*Toronto
Utica
*Vancouver, B. C.
Waterloo, Ia.
Williamsport, Pa.
Worcester

*Stocks of Oakite materials are carried in these cities.

How to Be Sure of Getting the Cleaning You Want

IF YOUR present methods of cleaning screen plates, wires, dandy rolls, felts, cylinders and other equipment are not as thorough, fast or economical as you believe they should be, here is a suggestion that may help you—

Call in an Oakite service man. Let him show you, by an actual demonstration, exactly what Oakite materials and methods will do for you—the time, money and labor you can save, above all, the thorough cleaning you can get and depend on.

Write us and we will call. No obligation.

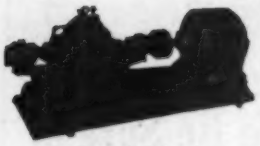
OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

OAKITE IS MANUFACTURED BY OAKLEY CHEMICAL CO.
16A THAMES ST., NEW YORK, N.Y.

Come to pump specialists!



A Type "HS" two stage horizontally split shell centrifugal pump direct connected to an electric motor. The "HS" Pumps are designed for capacities up to 1000 g.p.m. and bevels up to 360 feet. Ask for Bulletin 103.

Special conditions demand special types of pumping equipment. No matter what the conditions are, there is a "Chicago" Centrifugal Pump designed to meet them.

Our ability to meet the requirements in any type of pumping problem requiring judgment, skill and science is well demonstrated by our ever-increasing list of installations in industrial plants in every field. For the paper and pulp mills where dependable pumps are a necessity you will find a "Chicago" designed for every service.

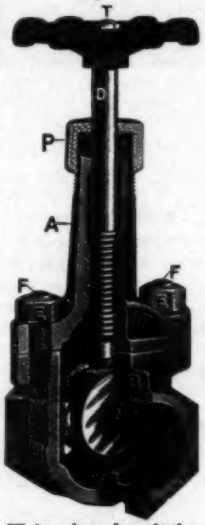
Bilge **Condensation**
Sewage **Circulating**
Vacuum **Fire**

Chicago Pump Company
Quality Centrifugal Pumps
2318 Wolfram St., Chicago, Ill.

POWELL VALVES

"Pilot" Gate Valves

Fig. 468



Write for descriptive Circular

All iron or iron body with steam bronze trimmings. Simple in construction.

Working Pressure up to 125 lbs.

Economical and Reliable

Avoid disappointment in Valve Service by specifying POWELL VALVES

The Wm. Powell Co.
214 Draper St.
Cincinnati, Ohio

ZAREMBA EVAPORATORS

ILLUSTRATION shows two Zaremba Triple Effect Evaporators in the West Virginia Pulp & Paper Company's Soda Mill at Tyrone, Pa. One Triple was installed in 1911, the other in 1916.

Zaremba Quadruple Effect Evaporator having capacity double that of the Triples shown was installed 1920.

Exhaust steam is used throughout.

MORE than fifty large Zaremba Multiple Effect Evaporators have been furnished to soda and sulphate pulp mills.

Zaremba Evaporators are also used for concentrating sulphite waste liquor—both acid and neutralized.

Consultation invited on new projects or where existing evaporators lack capacity or cause loss of soda.

REPEAT ORDERS ARE PROOF OF MERIT

ZAREMBA COMPANY 506 CROSBY BLDG. **BUFFALO, N. Y.**

New York Office: 95 Liberty Street

power problems. He believes that the cream of the water power in his state has been developed and that future reliance must be on steam, which means economical methods of coal burning.

Boston Paper Trade Association's annual outing will be held at the Charles River Country Club, Newton Center, Mass., on June 8th. Notice definitely to that effect was received from Secretary F. Bendil Tracy. There will be the usual dinner, sports program, including baseball game between merchants and manufacturers, and the Boston Paper Trade championship golf match.

The high water marks in two New England rivers on which paper mills are situated were not excessive, despite the heavy snows in northern New England. The Penobscot River rose considerably, but paper mills were not seriously affected, though the value of their auxiliary steam power was frequently demonstrated. At Holyoke, the water rose to 9.12 feet and caused some stoppage of machinery by backing into the tailraces of the mills.

The large merchant firm of Storrs & Bement Co., of Boston, has announced its final and reorganized directorate. Mr. William B. Stevenson becomes president, succeeding Frank B. Cummings, who retires; William N. Stetson, Jr., becomes vice-president and secretary; Bryant McQuillen, treasurer; George L. Webb, assistant treasurer.

Work is well under way in the dismantling of the Fall Mountain mill of the International Paper Co. at Bellows Falls, Vt. The power rights of the company have been transferred to the New England Power Association, who will develop 45,000 hydroelectric horsepower.

The American Tissue Mills, Inc., of Holyoke, have purchased 12,500 square feet of property with a one-story mill building and basement from the B. F. Perkins & Son, Inc., at Winter and Appleton streets, Holyoke. The expanding business of the tissue mills made the purchase necessary. The Cushman plant of the American Tissue Mills will probably be brought to Holyoke and the new property will also be used as additional storage space.

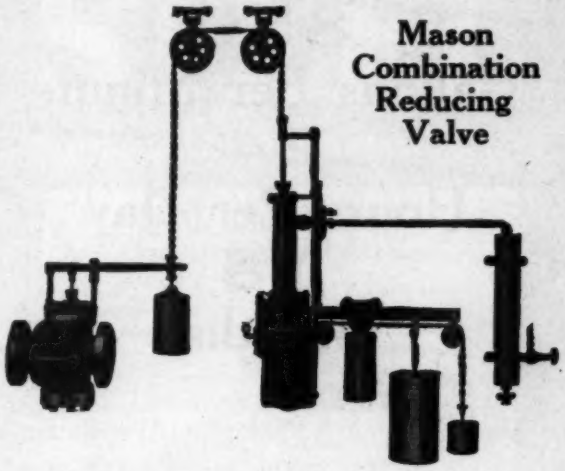
Mr. James Dearden, formerly purchasing agent of the Strathmore Paper Co., has resigned from that company and become associated with the Rourke Eno Paper Co., of Hartford, Conn. This company recently became Connecticut agents for the Champion Coated Paper Co., of Hamilton, Ohio.

A new line of paper has been brought out by the Chemical Paper Mfg. Co., of Holyoke, to be known as halftone letter. It is designed to meet the modern direct mail advertising need for a four-page letter capable of taking halftones as well as coated stock but with the feel and appearance as well as ink-taking properties of bond paper. It eliminates the gloss of coated and the poor halftone qualities of the strictly bond paper class.

There is a possibility that the Bath Iron Works, at Bath, Me., will be used for paper mill machinery manufacture again. However, the plans for the Warren Magazine Grinder, the famous pulpwood grinder which created such a sensation in paper mill circles since the war, have been sold to the Great Northern Paper Co. The Great Northern has several of these grinders in use.

Employees of the United Paperboard Co., Inc., 171 Madison avenue, New York City, have joined with the executives of that company in acquiring a group life insurance policy which provides for the protection of 765 lives at a cost of $1,502,500.

A new high-speed steel, combining hardness with toughness to an unusual degree, has been developed by Henry Disston & Sons, Inc., of Philadelphia, for use in their cutting machine knives. This steel is intended for work that requires a cutting edge that will retain its sharpness and at the same time stand up under hard service.



Mason Combination Reducing Valve

Fluctuating Pressures never faze a Mason

The Mason Combination Reducing Valve is specially designed for accurate control of pressures under conditions of widely varying demand. High initial pressures and superheat do not affect the dependable operation of this valve. It is especially suitable for use on digesters and paper machines.

Every Mason Regulator must pass a performance test made under actual service conditions, before it leaves the factory.

May we send you Catalog 62 containing complete information?

Look for the Mason Trademark to insure accurate, dependable service from

Reducing Valves
Pump Pressure Regulators
Boiler Feed Line Regulators
Water Pressure Reducing Valves
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Balanced Valves
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Boston, Mass.
9181

850
Gallons Per Minute
24
Hours Per Day
18
Months—

This is the record of the Layne Well operated by the Hammond Bag & Paper Co., Wellsburg, W. Va.

The Layne Pump in this well has been in continuous operation without repairs or adjustments.

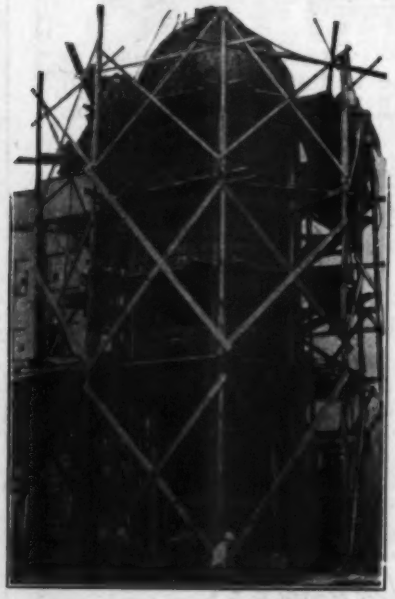
This instance is characteristic of Layne Wells and Pumps and is not unusual. Other paper mills are enjoying like results.

Let Layne Engineers Investigate Your Requirements

LAYNE & BOWLER MANUFACTURING COMPANY

HOUSTON MEMPHIS LOS ANGELES

You Get More Than a Digester



—when you install a Manitowoc. You get a Digester that is designed solely *for your mill*. One that will give you the fullest measure of production at the lowest operating cost.

It is the added advantage of Manitowoc equipment—Incinerators, Rotary Bleaching Boilers, Barking Drums, Digesters, Diffusers, Tanks, Disc Evaporators, Refiners, etc. —an engineering service that means more economical production.

Let our engineers design time-saving equipment for your mill—equipment that will give the same dependable performance—year after year.

Manitowoc Engineering Works

Manitowoc, Wisconsin

MANITOWOC

OHIO NEWS

Superior Plant Sold

The Philip Carey Roofing Company, of Lockland, have purchased the Superior Paper Company's plant at Franklin which was sold recently at a receiver's sale. It was thought at the time of the sale that it would be used for the manufacture of tissue paper as the machinery was adapted for this.

The new owner, one of the foremost manufacturers of roofing paper in the country, plans to remodel the mill for the manufacture of asbestos pipe covering and a heavy grade of wrapping paper to be used for wrapping rolls of roofing paper.

Seventy-five students of the electrical and mechanical engineering college of the Ohio State University were in Dayton recently and made an inspection tour of the city and the Mead Pulp and Paper Company's plant. The object of the trip was to give the engineering students some practical knowledge of the magnitude of modern industrial operations.

Fulton Engineering Co. Erecting Building

The Fulton Engineering Company is making fine progress on their new fireproof factory and office buildings now under construction in Middletown. The new structure, a large one-story building of concrete and steel construction, fireproof throughout, is being built by the Fulton Company themselves.

The Fulton Company, headed by William B. Fulton, specializes in paper mill engineering and manufacture of the Fulton Dryer Drainage System.

William McLean, associated with the Middletown plant of the Advance Bag Company for many years, left recently for Howland, Me., where he will take charge of the Advance Bag Company's plant.

The Fairbanks Fibre Box Co., of Middletown, is constructing a new warehouse for the storage of paper. The structure, which will be 45x180 feet long and 31 feet high, will be equipped with an electric crane running from end to end. It will hold, when completed, approximately 100 carload rolls of paper and board. The structure was designed and is being constructed by Frank Hill Smith, Inc., engineers, of Dayton.

Z. W. Ranck, president and general manager of the Crystal Tissue Mills, at Amanda, has been elected a director of the Oglesby and Barnitz Bank and Trust Company. Mr. Ranck has always taken an active part in civic affairs, and is president of the National Association of Tissue Manufacturers.

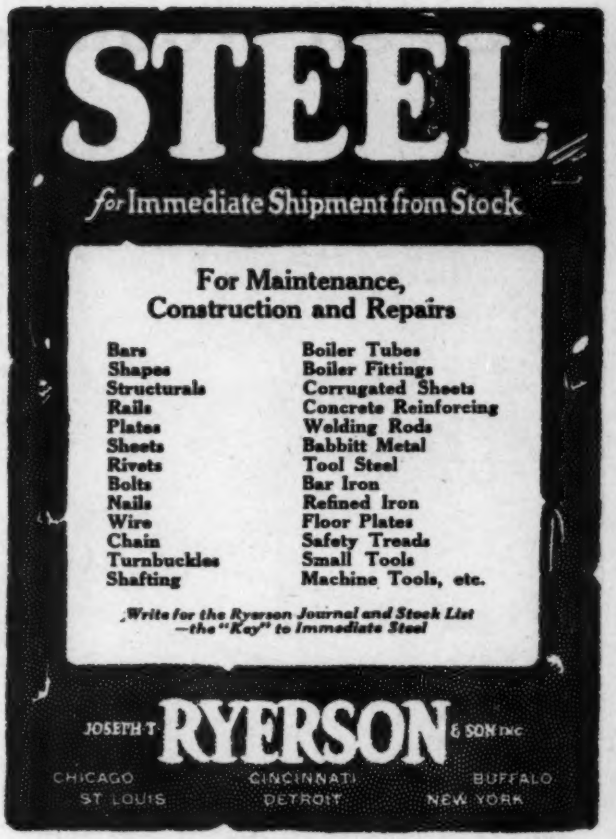
Endeavors to Quash Receiver's Suit

Attorney General Crabbe has filed a motion to quash in the Federal Court the suit of the receiver for the American Writing Paper Co., Excello, to compel annulment of a lease of canal water power rights formerly held by the company to the firm of Goudie & Johnson, Middletown.

Power rights of the Miami and Erie Canal at Excello are involved. The receiver charged the paper company obtained a 30-year lease without the privilege of renewal and that the state department of public works had no right to cancel the lease for nonpayment of rent without giving the company or receiver due notice.

Sidney L. Willson, Holyoke, Mass., is the receiver. The motion to quash the service contended a suit cannot be maintained against a state by the citizen of another state.

The News Print Service Bureau has lost the services of Charles W. Halligan who has resigned to take the position of manager of the accounting department of the Rubber Association of America, headquarters of which are at the Fisk Building, Broadway and 57th Street. The rubber manufacturers are developing a standard system of accounting similar to that used in the newsprint industry where Mr. Halligan has made special studies over a number of years.



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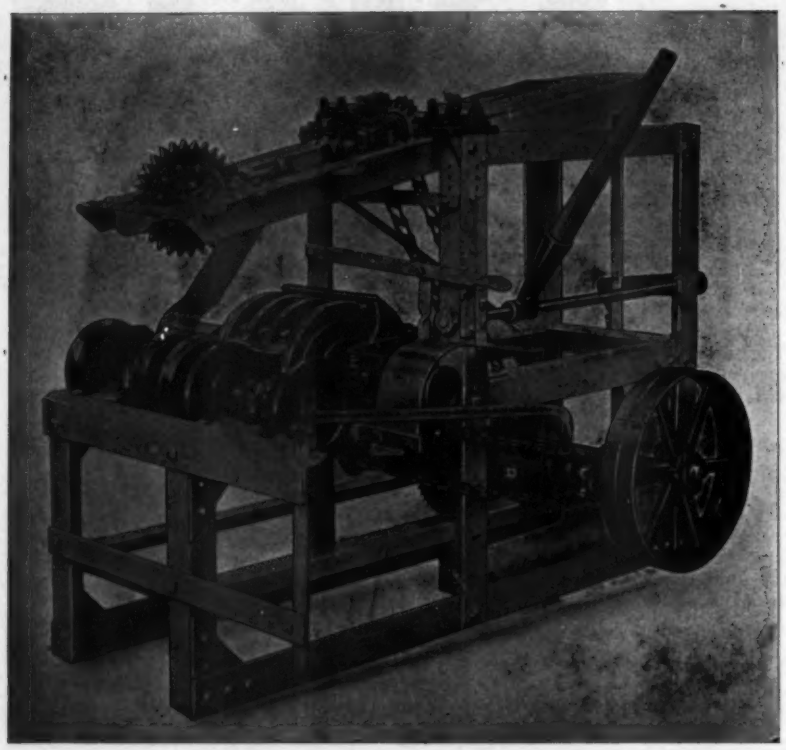
ALLIGATOR
STEEL BELT LACING
Flexible Steel Lacing Co.
4675 Lexington Street, Chicago, U. S. A.
In England at 135 Finsbury Pave, London, E.C. 2
Standard of the World In Belt Lacing
Each tooth is a tiny vise that binds and protects the belt ends in a grip of steel. It is the strongest of all belt lacing and usual service is equal to that of the belt itself.
Quick, easy application
—With a Hammer As the Only Tool
No holes to weaken belt, no unequal pull or inflexibility in running over pulleys. The good performance of the steel rocker hinge pin is unaffected by operating conditions.
Recommended and adopted as standard the world over by belting manufacturers, engineers, supply houses as a lacing that will give efficient service on any belt of any size in any service.

Clean Wood for Clean Pulp



—Reduced Costs

Can be accomplished by use of our Rossers.

Recent installations—

Great Northern Paper Co.
Eastern Mfg. Co.
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For Portable and Mill Use

SOUTHWARK HYDRAULIC PRESSES

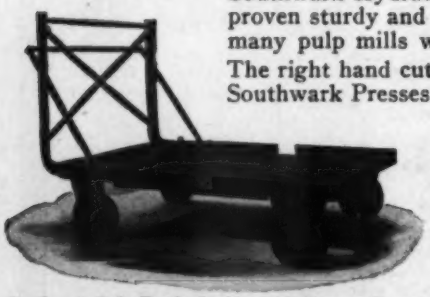
for Pulp, Sulphite, Baling, Etc.

HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.



Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
100 E. South St.

400 Washington Ave.
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343 S. Dearborn St.

WISCONSIN NEWS

Paper Mills Discuss Engineering Course

With a view to considering the advisability of instituting a co-operative engineering course for paper mills of the Fox and Wisconsin River valleys, representatives of about twenty paper mills of these sections of Wisconsin and the entire faculty of the School of Engineering, University of Wisconsin, Madison, held a conference in the Conway Hotel, Appleton, on the evening of April 23.

This course is used in several of the big technical institutes of the East with great success and makes it possible for a mill engineer to spend part of his time in school and part of it at the mill. Whether such a plan can be worked out for the Wisconsin mills in co-operation with the State university is the problem now being considered. A committee consisting of John Alexander, of the Nekoosa-Edwards Paper Co., Nekoosa, and Paul Scallon, of the Riverside Fibre and Paper Co., Appleton, was appointed to continue the work of investigation in this field.

The mills represented were : Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards; Riverside Fibre and Paper Co., Appleton; John Strange Paper Co., Menasha; Marinette-Menominee Paper Co., Marinette; Holberg Paper Co., Green Bay; Thilmany Pulp and Paper Co., Kaukauna; Kimberly-Clark Co., Neenah; Neenah Paper Co., Neenah; Fox River Paper Co., Appleton; Patten Paper Co., Appleton; Consolidated Water Power and Paper Co., Wisconsin Rapids; Gilbert Paper Co., Menasha; Interlake Pulp & Paper Co., Appleton; Wausau Sulphate Fibre Co., Mosinee; Rhinelander Paper Co., Rhinelander; Marathon Paper Mills Co., Wausau; Wausau Paper Mills, Brokaw; Combined Locks Paper Co., Combined Locks.

To Make Paper from Peat

Possibility of establishing a paper mill in Horicon for the manufacture of paper products from peat was announced in that city recently as the result of a survey made of the peat beds in the famous Horicon Marsh by William A. Drahn, of Westfield, representing Charles C. Roth, a paper industry scientist.

Mr. Roth, a German by birth, who came to this country a few years ago, claims to have perfected a formula for the manufacture of coarse paper from peat. The products he has been working on particularly are wall board and box board. He has been conducting his experiments at the home of Mr. Drahn and is now ready to look for a site to establish a mill, he says.

The peat from the deposits in the vicinity of Horicon are said to offer fine possibilities and a complete analysis of it will be made immediately, Mr. Drahn said.

Upholds Capture Clause

The Wisconsin State Supreme Court in a decision recently upheld the so-called recapture clause of the State water power act which makes the granting of water power rights by the State conditional on the willingness of the owner to sell his property to the State after thirty years at a value fixed by the State railroad commission at the time the rights are granted.

This decision was in the case of the Fox River Paper Co., of Appleton, who with several other paper mills utilize the "middle dam" of Appleton, and had asked for a state permit to reconstruct the dam. They objected to the recapture clause, but it was upheld by the circuit court of Dane County and now by the Supreme Court.

State Forestry Problems Discussed

Problems of forestry were discussed at a conference of about twenty-five representatives of paper mills in Wisconsin, which took place last month in Wausau. The conference was called by D. C. Everest, general manager of the Marathon Paper Mill Co., Wausau, at the request of an interim taxation committee of the State legislature for the purpose

A Reputation
Built Up from
Built-In Quality

As far as service and quality are concerned it does'nt matter to Ganschow whether you buy the smallest pinion or a gear twice as tall as an averaged sized man. They all receive the same careful attention, correct designing and possess the same built-in quality.

Specialized machinery, modern production methods, and a will to make the best gears possible, assure Ganschow users of service, fine workmanship, and a satisfaction that only the finest quality can give.

Give us an opportunity to quote on your requirements.

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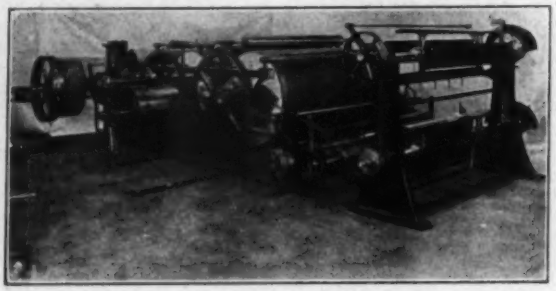
SPEED TRANSFORMERS
CUT GEARS-FABROIL NOISELESS PINIONS



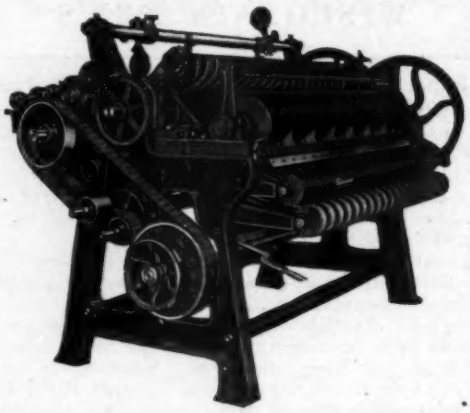
Latest Type Crepe Machine

Dryer 48″ diameter by 84″ face.

Same machine can be built in any desired width and with any number of dryers. This machine is equipped with Drum Winder and Double Automatic Collapsing Reel.

Hudson-Sharp Machine Co.
Green Bay, Wis.

Selling Agents:
Gibbs-Brower Co., 261 Broadway, N. Y. C.;
166 Jackson Blvd., Chicago



PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

Meisel Sheet Cutters

Automatic Intermittent Feed Sheet Cutting and Slitting Machine

Cuts all kinds and thicknesses of paper from news to the thickest box board, various kinds of cloths, combined cloth and paper, tinfoil and other material taken from the web.

Sheets up to 132 inches in length may be cut

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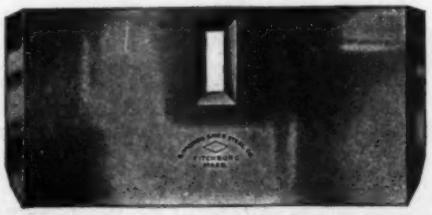
SIMONDS

Barker and Chipper KNIVES



Tough steel of edge-holding quality, backed by expert workmanship, makes Simonds Knives the most serviceable for pulp and paper mills.

Write for Catalog and Prices

See page 484 in the 1925 Paper and Pulp Mill Catalogue

Simonds Saw and Steel Co.
Established 1832 FITCHBURG, MASS.
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of discussing taxation revision. Owing to a special session of the legislature called by the governor, the tax committee could not come. The paper mill conference was held nevertheless and the time was devoted to the subject mentioned.

Two well known forestry experts, Dr. Hugh P. Baker, New York, secretary of the American Paper and Pulp Association, and D. A. Crocker, New York, forester of the association, spoke on the forestry problems of the country and explained the needs of reforestation in Wisconsin.

New Office Building Under Way

Construction has started on the new office building of the Neenah Paper Co., of Neenah. It will be a beautiful two-story fireproof building erected on the site of an historic stone flour mill which has been dismantled.

The project marks another step in the growth of this important industry. The company was organized in 1885. Book paper was manufactured. Its original stock of $75,000 has grown to $1,000,000. Its three machines manufacturing bond and ledger papers have a capacity of thirty tons a day. The officers of the company are J. A. Kimberly, president; J. C. Kimberly, vice-president; D. K. Brown, treasurer and general manager; Kimberly Stuart, secretary and assistant manager.

Traffic Association Holds Annual Meeting

The annual meeting of the Wisconsin Traffic Association, whose membership is composed of Wisconsin paper and pulp manufacturers, was held a few weeks ago in Chicago. Among the items of business transacted was the change in name to Wisconsin Paper and Pulp Manufacturers' Traffic Association, to give the association more individuality.

Officers elected are C. S. Boyd, president of the Appleton Coated Paper Co., Appleton, president; Guy Waldo, manager of the Flambeau Paper Co., Park Falls, secretary and treasurer. An executive committee also was elected and consists of the two men named and L. E. Nash, vice-president of the Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards; W. H. Ryan, Kimberly-Clark Co., Neenah; William Eibel, Rhinelander Paper Co., Rhinelander; George P. Berkey, vice-president and manager, Consolidated Water Power and Paper Co., Wisconsin Rapids; D. K. Brown, general manager of the Neenah Paper Co., Neenah.

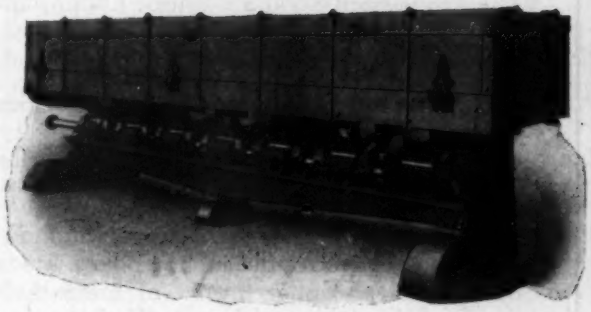
Another feature of the State water power act will be applied by the State Railroad Commission shortly in the case of the Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards, whom the Commission had given permission to build a dam. At the time the plans were approved, the question whether it came under the recapture clause was held open. Now the Commission will try to determine whether the lake created by the dam is navigable. The recapture clause applies to dams on navigable streams. According to a recent interpretation of an amendment to the State water power act, a navigable stream is even one that can be used for floating logs.

The plant of the new Esco Paper Co., which recently located at Peshtigo, is rapidly being put into shape for beginning of operations. The plant will be housed in the old Peshtigo high school which has been remodeled. Machinery is being installed, one of which is a 32-ton crepe paper machine. Among those identified with the new concern are Fred Krug, S. A. Merrien and Fred Becker, of Chicago, and Arthur May of Green Bay, Wis.

George W. Mead, president of the Consolidated Water Power and Paper Co., of Wisconsin Rapids, was elected mayor of that city on April 6 by an overwhelming majority. The outcome was 4 to 1 over his nearest opponent. Though a millionaire, he declared himself a workingman's candidate, and it was the laboring men that gave him almost unanimous support.

Through the efforts of local foundries, manufacturing paper mill machinery, a gray iron foundrymen's association is being organized in central Wisconsin. Already twenty-six foundries have joined the movement. The purpose of the asso-

Quality Pulp



Through Barker-Internationals

Solid turned C. I. Cams open side type—Camshaft removable through side. Uniform suction and blast. Extra heavy cast iron legs and bridge free for rigidity. Camshoe holder and Pitman cast integral.

Latest approved design
High grade workmanship
and materials

Made in sizes from 6 to 16 plates

Repeat orders are our best endorsement

Green Bay Barker Co.
Green Bay, Wisconsin

Makers of the famous Green Bay Barker

Superior in Name and Quality

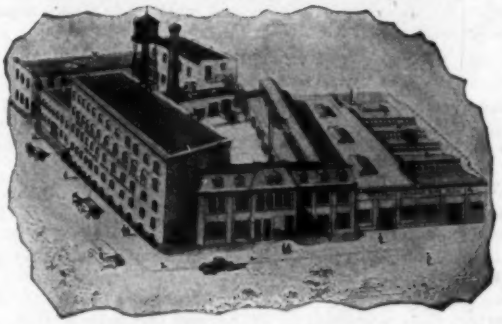
CABBLE Superior Fourdrinier Wires have the reputation of over three-quarters of a century wire making behind them.

Their Superiority is the result of a thorough knowledge of the requirements of progressive paper makers gained in that long period.

That is the reason why paper mills from Coast to Coast from the Great Lakes to the Gulf are constant users of Cabble Superior Fourdrinier Wires.

Smooth, and of an even mesh, Superior Wires do not groove the suction boxes. Made of the best phosphor bronze or brass their toughness and strength enable them to withstand the hardest usage for the greatest length of time.

The same Superior quality can be had in phosphor bronze or brass wire cloth for paper and pulp mills.



OUR PLANT IN BROOKLYN, N. Y.

The Wm. Cabble

Excelsior Wire Mfg. Co.
80-88 Ainslie Street
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BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

ciation is to undertake research work in metal working in co-operation with the University of Wisconsin School of Engineering.

A safety record that may have set a new mark for paper mill departments has been made by the paper machine operators of the Kimberly mill of Kimberly-Clark Co. The department operated three hundred years of "safety man-days," which is considered remarkable for this department, one of the most dangerous in a paper mill. Suitable prizes were awarded by the company to the men.

The Consolidated News, plant publication of the Consolidated Water Power and Paper Co., with headquarters in Wisconsin Rapids, is being enlarged to include advertising, and the scope of the articles, editorials and general news items is being broadened. The magazine will be placed on the news stands.

In connection with the observance of American Forestry Week, April 18 to 24, Vance P. Edwardes, Appleton, connected with the Forest Products Laboratory, at Madison, issued a statement in which he stressed the great importance of "save-alls" for the recovery of fibre from white water. Mills which use them not only accomplish a saving in fibre, but also in alum, clay and water, he said. The value of recoverable fibre saved by mills in this manner may run as high as $500 a day, he declared.

H. J. Rosenow last month resigned his position with the McGillan-Asmuth Paper Co., of Menasha, which he held for twelve years, and has purchased a summer resort in northern Wisconsin.

Incorporation Changes

Articles of dissolution of the Peerless Paper Co., Menasha, have been filed with the county register of deeds, by the former officers. They were signed by A. W. Asmuth, president, and T. E. McGillan, secretary.

Articles of incorporation of the McGillan-Asmuth Co., Menasha, have been amended to increase the capital stock from from 750 shares of comomn stock and 750 shares of preferred stock to 1,000 shares of common stock with par value of $100 a share, or a total capitalization of $100,000.

An addition is being built to the present boiler house and warehouse of the Appleton Coated Paper Co., of Appleton. It will be three stories in height. The addition is well under way and will be completed in a few weeks. The new structure is of brick, steel and concrete.

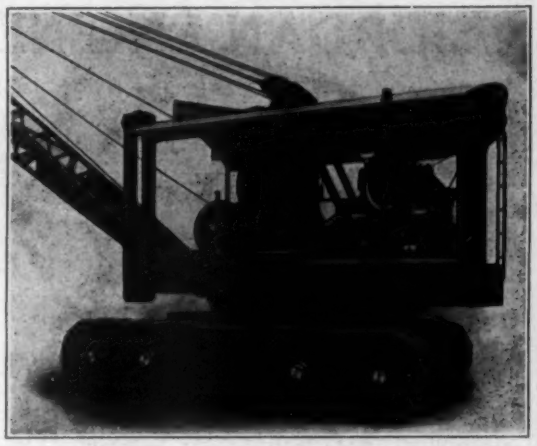
Damage of about $5,000 was incurred in a fire at the Grandfather Falls Paper Co. plant at Merrill, Wis., last month. The blaze was caused when an electric light blew out and ignited a quantity of mill dust. The city firemen were at the time extinguishing another fire in city, but employees of the paper mill succeeded in putting out the mill blaze.

A small fire broke out in the engine room of the George A. Whiting Paper Co. mill at Menasha a week ago. It originated from a quantity of oiled waste. A sprinkler head was touched off and city firemen managed to put out the rest of the blaze.

George A. Whiting, Menasha paper manufacturer, recently was called to Ripon to attend the funeral of his brother Spencer, who had died at the age of 95 years. He was a resident of Ripon since 1830.

The Northern Paper Mills, of Green Bay, which is building a large power dam at White Rapids, is hauling supplies from Wausaukee for the construction project.

Paper mill executives have been called upon frequently of late to address civic and business men's clubs. Judson G. Rosebush, general manager of Northern Paper Mills, Green Bay, addressed the Green Bay Y Men's Club on "Thrift." W. A. Kelley, a mill manager of the same mill, spoke to the



A Twenty-five Ton Gasoline Crane That Travels Anywhere Independently of Tracks

Here is a gasoline crane equal to the heaviest demands that a pulp mill can make upon it; gasoline operated; mounted on strong, rugged, powerful, all-steel American Continuous Chain Treads; equally efficient with log grapple, clamshell bucket or hook; has all the speed and accuracy which has given "AMERICAN" Locomotive Cranes their enviable superiority.

"AMERICAN" Continuous Chain Treads are much more rugged than the usual crawler type traveling mechanism. The tread frames are steel with bronze bushed main bearings and the tread shoes are hard grade steel castings with hardened steel pins.

If you have a material handling problem at your mill or your woods operation this big 25-ton "AMERICAN" or some other member of the "AMERICAN" Crane family ranging from 10 to 30-tons capacity will solve it and save money for you.

It won't obligate you to ask for full information. Why not do it now?

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, New Orleans.

A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans

Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

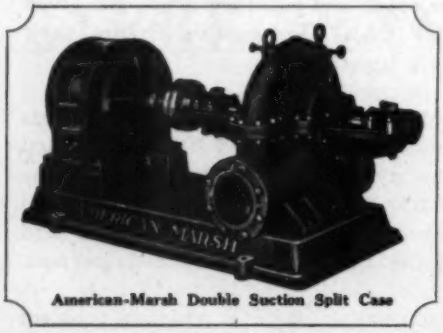
Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. **Hoosick Falls, N. Y.**

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue



American-Marsh Double Suction Split Case

The Line Includes
BOILER FEED PUMPS
WET VACUUM PUMPS
SUCTION BOX PUMPS
CONDENSATION PUMPS
AIR COMPRESSORS
STOCK PUMPS
DEEP WELL ENGINES
BILGE PUMPS
And Many Other Types

AMERICAN-MARSH PUMPS

Specializing In Quality Pumps

For more than thirty-five years we have been building quality pumps for every purpose. In every capacity American-Marsh Pumps deliver the highest type of service year after year.

Thousands of users have standardized on American-Marsh pumps as the solution to their pumping problems.

Let us estimate your requirements. Our engineers are at your service.

Write for Bulletin on the type that you are interested in.

Simplex—Duplex—Centrifugal

AMERICAN STEAM PUMP COMPANY

Chicago Office
926 Monadnock Block

Battle Creek, Michigan

New York Office
17 Battery Place

Green Bay Rotary Club on the mysteries of ground wood pulp. Lee Jonte of the Hoverg Paper Co., Green Bay, addressed the Green Bay Gyro Club on the manufacture of paper. Austin Coffrin of the Port Howard Paper Co., Green Bay., spoke to the De Pere Rotary Club on the same subject.

C. C. Yawkey and D. C. Everest, president and general manager respectively of the Marathon Paper Mills Co., Wausau, have been elected president and vice-president respectively of the newly formed Outdoor Sports organization of Wausau.

Elmer H. Jennings, of Appleton, who holds an executive position with the Thilmany Pulp and Paper Co., Kaukauna, has been elected president of the Appleton Chamber of Commerce.

The Kaukauna High School has selected the name of "Papyrus" for its new high school annual because of the city's reputation as a paper mill city.

Report of I. P. Co. Shows Substantial Gain

International Paper Co., reports for the year ended December 31, 1925, net earnings of $1,571,281 available for common dividends after depreciation, interest, taxes, preferred dividends and including reduction of contingency reserves set up at the end of 1924 against the newsprint price decline which the management saw was inevitable during 1925.

Book value of the 500,000 shares outstanding is now, including reserves, in excess of $110 a share, after deduction from property account of liberal allowances for depreciation and depletion but with no allowance for recent increases in property values which, in the case of timber lands especially, have sometimes been several times the original cost. The company's waterpowers (aggregating 180,000 horsepower developed and 420,000 horsepower undeveloped) and its more than 10,000,000 acres of timber lands and limits, stand on the books at far less than their actual present value.

The total production of paper during 1925 aggregated 503,702 tons, against 434,288 tons in 1924. This is due in part to the acquisition during the year of the Ticonderoga, N. Y., and the Bastrop, La., mills.

With the completion of doubling the capacity of the Three Rivers mill, and the construction of a new mill on the Gatineau River in Quebec, the company will have a daily output of 1,200 tons of newsprint in Canada. The Kipawa bleached sulphite mill at Temiskaming, Quebec, has been increased from 170 to 250 tons daily capacity, and this is estimated to be 50 per cent of all the pulp used in the world for the manufacture of rayon, or artificial silk. The Bastrop, La., mill, although operating at present on purchased wood, will soon have a permanent supply of raw materials from its own lands, if an investigation now under way proves up to expectations.

The company has also acquired approximately 376 square miles of Crown timber limits on the Gaspe peninsula, and 2,000 square miles on the Upper Ottawa and Gatineau Rivers, in Quebec. The latter will permit the enlargement of both the Kipawa and Gatineau mills, and will reinforce the available supply for the newsprint mill which the company contemplates building on the Quinze (Upper Ottawa) some time during the next four years.

Joseph T. Ryerson, Inc., have taken over the Reinforcing Division of the Penn Metal Company of Boston, and have established general sales offices at 677 Concord avenue, Cambridge, Mass. The sizes and tonnage carried are to be added to, and the facilities also are to be increased.

At a meeting of the board of directors of the Kalbfleisch Corporation held April 21, Mr. Arthur C. Bate was elected secretary. Mr. Bate's connection with the paper industry dates back some years, and during the last four years he has had charge of the sales of various branches of the Kalbfleisch Corporation having to do with the supply of chemicals for paper making.

Progress in Paper Making

WITH progress in American paper making, we are concerned and connected. To commemorate the advances that have been made, the more important annals of the industry will be recalled from month to month in this space.

Ground Wood Pulp

Ground wood pulp was invented in Germany by Frederick Keller in 1840, but did not take an important place in paper making for a good many years. Its manufacture was not begun in the United States until 1867.

In this year the Pagenstechers erected a mill at Curtisville, Massachusetts, which they equipped with two imported grinding machines. The original capacity of the plant was only about half a ton a day. The product was first tried out by a neighboring paper mill with such satisfactory results that the company contracted for the entire output, and for a year had a monopoly of the new pulp.

Established 1842

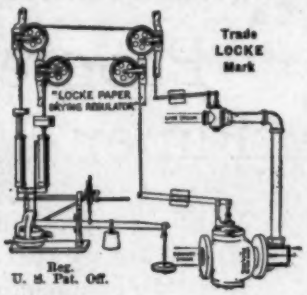
Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS

LOCKE Paper Drying Regulator



This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order.

Also manufacturers of other steam specialties.

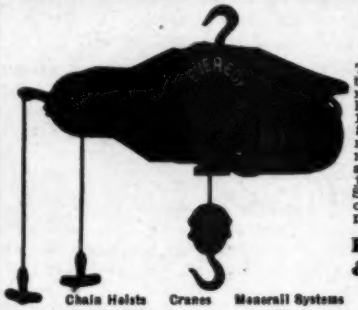
Locke Regulator Co., 76 North St., Salem, Mass.

"Locke" Regulator Agency, 30 Cortlandt Street, N. Y. C.

Canadian Representatives: Pantek Brothers Limited, 1805 Delorimier Ave., Montreal, Can.

500 lb. Electric Hoist

$225.00



This Everedy Hoist is the most accessible hoist made. Light—500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy—40 feet per minute A. C., 25 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

Chain Hoists Cranes Monorail Systems

READING CHAIN & BLOCK CORP.

READING, PA.

The Tide Water Power Group

—for paper mill lubrication

Tycol Gear Compound	A soft, semi-fibrous grease for enclosed gears under heavy pressure.
Tycol Medium Yarn Grease	For beater bearings where high temperatures, heavy pressures and water are present.
Tycol Yarn Grease	For dryer and other bearings operating at high temperatures.
Tycol Lubricant No. 1	A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.
Tycol Grease	A hard grease for replenishing Tycol Yarn Grease.
Tycol Gear Coating Soft	A viscous lubricant especially recommended for use on slow-moving open gears.

MAY we have the opportunity of sending one of our Staff Engineers to make a survey of your mill's lubrication requirements and to discuss the Tide Water Power Group with you?

TIDE WATER OIL SALES CORPORATION
11 Broadway, New York

WEBSTER QUALITY

Steel and Malleable Chains for Pulp and Paper Mills

WHATEVER the type of chain that best meets your own peculiar requirements, Webster has it, and when you have made sure that the chains you employ in your mechanical handling devices bear the —Z— trade-mark of the Webster works, you have gone a long way toward profitable operation in your plant.

Webster chains for mechanical handling devices in pulp and paper mills consists of pintle chain, detachable chain, combination steel and malleable iron chain, riveted and detachable drag chains, and steel pushed roller drive chain.

Our 96-page catalog No. 46, covering our complete line of chains and sprockets, will be forwarded to you on request.

THE WEBSTER MFG. CO.

4500-4560 Cortland Street
CHICAGO

THE JOHNSON FRICTION CLUTCH

The Powerful Clutch for Paper Machines

Being remarkably compact, yet carrying tremendous power, the Johnson Clutch is just the thing for use on paper machines. Noted for their ruggedness and durability, Johnsons give highly satisfactory service for years and years.

Double Clutch—Exterior

Reverse motion may be obtained by installing the Johnson Double Clutch between bevel gears on paper machines. Spur gears are used frequently to get two speeds on machinery. Equip your paper machines with Johnson Clutches.

Write for Catalog P. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

MICHIGAN NEWS

Frank Mosteller, for the last years vice-president and director of the Kalamazoo Vegetable Parchment Co., tendered his resignation effective April 21. He will retain his place on the board of directors, but otherwise will not be actively associated with the management of the plant. He intends to make his home at West Chester, O., near Cincinnati, the old family homestead. Immediately following his departure from Kalamazoo, he will enjoy a three months' hunting trip in the remote sections of Alaska.

Kalamazoo Paper Co. Starts New Machine

The Kalamazoo Paper Company's 168-inch machine, the widest machine in the Kalamazoo valley district, is now in operation and running steadily. It has increased the total output of this concern from 100 to over 150 tons daily.

The installation of this new unit was made in mill No. 3, the total expense involved in necessary construction and machinery being approximately $1,000,000.

The Fourdrinier machine proper is the product of Rice, Barton and Fales, Worcester, N. Y. It has a maximum width of 168 inches, uses a 166 wire and produces a sheet that trims about 156 inches. It is equipped with 26 dryers, each four feet in diameter. The drying capacity is automatically governed by a Stickles automatic control, which can be regulated through weights to suit the grade and weight of paper produced. The two machine calenders, installed as units of the machine, were made by the Farrell Foundry and Machine Company, Ansonia, Conn.

The main drive for the big machine is located in the basement and consists of a General Electric 300 h. p. variable speed motor and a 200 h. p. constant speed motor, same construction. A taximeter attached to the motor shaft, manipulated by means of a push button, governs the speed of the machine from 100 to 600 feet a minute. The dryers are controlled for starting and stopping, much the same as the starting an automobile. This makes it possible to start the whole dryer unit on slow speed and then throw it into high speed with minimum danger of breaking the paper. The machine calenders and winders are both driven by the variable speed motor propelling the machine. Rolls on the calenders are cooled by air, driven by a Clarage fan, while the calenders are automatically oiled from a tank on each, supplied by a pump in the basement, driven by a one h. p. General Electric pump. The oil flows back by gravity to source of supply and can be used over and over again.

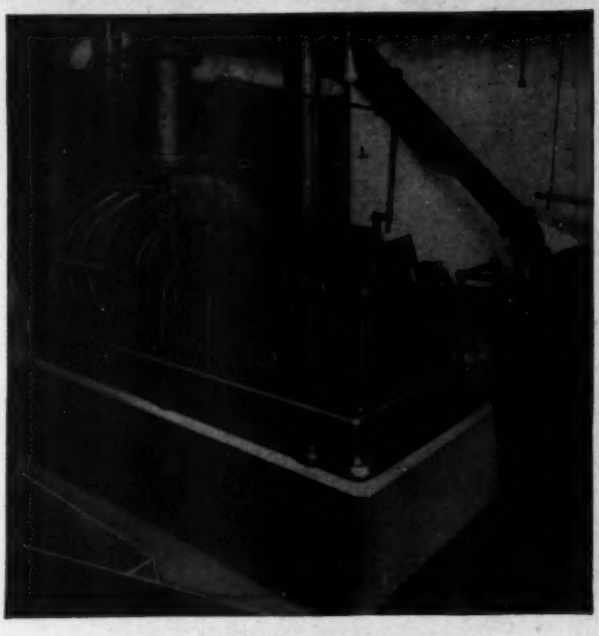
The great machine rope drive is guarded by heavy iron railings, making contact with it impossible.

In the beater room are two Jones Majestic Jordans and four 2,000 lb. Jones beaters. These beaters are driven in pairs by General Electric motors; Lenix drives, the product of F. L. Smidth & Co., New York, are installed on the pulleys, thus insuring at all times a maximum of drawing power from the belt lines. A single washer made by the Improved Paper Machinery Company is sufficient to furnish ample raw stock.

In the basement are the additional stock chests, and an interesting white water control made by the Kalamazoo Paper Company. This device acts as a saveall and economizes in the use of water as well. All water used in the mill is softened by a new system just installed and also passes through a battery of Norwood Engineering Company's filters.

In the finishing room are two 72-inch and two 92-inch cutters equipped with Moore and White layboys. There is a monorail electric hoist, capable of handling rolls up to 3,000 pounds weight. Other equipment includes a Cameron rewinder and an 84-inch Smith and Winchester under-cut trimmer.

The boiler room has been more than doubled in size to permit the installation of three 500 h. p. Wickes boilers, which can operate safely at a 200 per cent rating. Each boiler is equipped with a Westinghouse under-feed stoker, while the coal is carried in an overhead hopper. This hopper



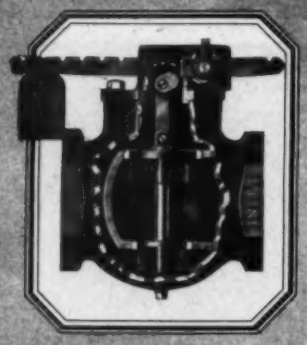
ROOTS

Rotary Pumps

Where dependability counts—that's where you'll find Roots Rotary Pumps. They're not the cheapest to *buy*, but they're the most economical to use—economical in power consumption, in maintenance cost, and because you *know* they'll be right on the job when you need them most.

For vacuum service or for handling liquids and stock, you can't buy better. Ask for a bulletin covering pumps for your particular service.

The P.H.&F.M. ROOTS CO.
DEPT. 10
CONNERSVILLE, IND.
Chicago Office 130 S. Michigan Ave. New York Office Room 800-120 Liberty St.



SOME back pressure valves stick when they're hot. But not so with the Davis. They're designed to work even better when the steam heats them than when they're cold. Some back pressure valves call for new springs—repairs—every so often. Not so the Davis. They're constructed with a counterweighted lever, so that the resistance is constant. Those are just two of the superiorities of Davis Back Pressure valves which have put them well up on the preferred list.

G. M. DAVIS REGULATOR CO.
422 Milwaukee Avenue, Chicago, Illinois

DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1875

VALVE MAKERS FOR OVER FIFTY YEARS

P13-Gray

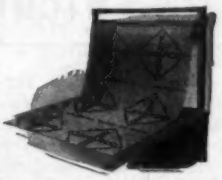
"In-and-Out"
vs.
"Sure-to-Stay"

Which kind of packing are you paying for? The kind that needs repacking again and again, or the kind that lets you forget about pipe joints?

You can be sure you're getting packing that stays when you buy Jenarco. This red vulcanized packing makes a joint leak-proof and keeps it leak-proof longest.

Jenarco is tough and durable, and can be relied on not to crack, crumble nor squeeze out at the joint. It is supplied in sheets or ready cut gaskets.

JENKINS BROS.
80 White St.....New York, N. Y.
524 Atlantic Ave....Boston, Mass.
133 N. Seventh St. Philadelphia, Pa.
646 Washington Blvd..Chicago, Ill.
JENKINS BROS., LIMITED
Montreal, Canada London, England



Jenarco Sheet Packing

Jenkins Ready-Cut Gaskets

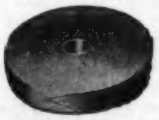
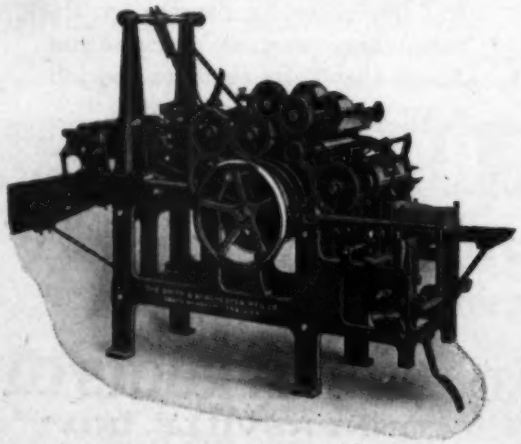


Fig. 227. Pump Valve. Send for schedule of principal compounds and services for which Jenkins Pump Valves are guaranteed.

JENARCO Jenkins Packing

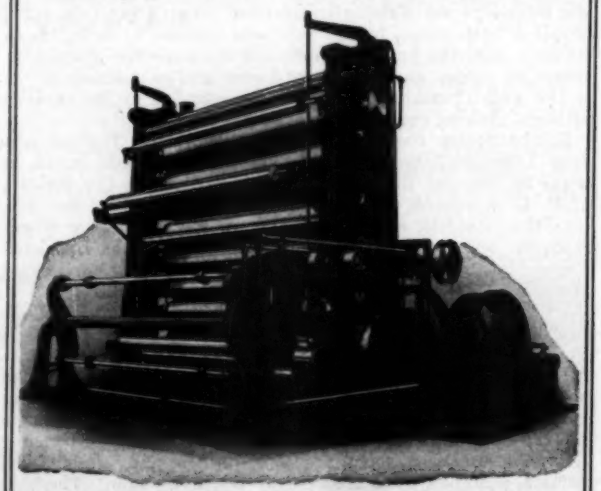
Established 1828
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of
Paper Making Machinery



Paper Bag Making Machinery

NORWOOD
SUPER CALENDERS



WE ARE SPECIALISTS IN
Paper Finishing Machinery

NORWOOD ENGINEERING CO.
FLORENCE, MASS., U. S. A.

is being extended to supply the three boilers installed when the mill was originally erected. All coal is handled from the bunkers by a clam bucket, operated on an electric monorail. A Clarage fan furnishes induced draught to the furnaces and carries the hot air and gases through the economizers.

In the power house are a General Electric 2,500 k. w. turbine and two 500 k. w. turbines and elaborate swtich board system. Boiler feed, vacuum feed and reciprocating pumps are placed to insure ample water for use at all times.

A. H. Dwight

Austin H. Dwight, 71, president of the Hawthorne Paper Company, Kalamazoo, and one of Michigan's widely known papermakers, passed away on May 4th, in New Borgess hospital. His death was the direct result of a stroke of apoplexy, which occurred in September, 1925, while Mr. Dwight was at his summer home at Gun Lake. He was brought to Kalamazoo and rested for some time at his home in Allen boulevard. For the last four or five months he has been a patient in New Borgess hospital, but never has shown any decided improvement.

A. H. Dwight was born in New Haven, Conn., in 1855. He was one of a family of seven sons. His father was owner and manager of a successful brass foundry in the East, but following the popular trend among New Englanders came west with his family and settled at Martin, Mich. There the senior Dwight was very successful. He acquired and profitably worked a large farm of over 600 acres. This tract of land extends to Gun Lake and has a frontage of over three quarters of a mile on the lake.

On this land is located the present A. H. Dwight summer homestead, a stone structure of almost feudal proportions, surrounded by a fine stone wall. The house is situated on the banks of the lake and is surrounded by a great sweeping lawn and spaces devoted to flowers. During the lifetime of Mr. and Mrs. Dwight this spot was developed and beautified into one of the finest summer homes in Michigan. It was as hospitable as it was attractive, affording the owners ample opportunity to entertain their many friends.

Mr. Dwight was here afforded ample facilities to enjoy his hobby, the culture of dahlias. At one time he had over 200 varieties on his place, many of them being extremely rare. It was well worth the drive to Gun Lake to inspect his collection.

Mr. Dwight entered the paper business with his brothers in Chicago, the concern being known as the Dwight Brothers Paper Company. That has since developed into one of the best known paper jobbing houses in the country. While Mr. Dwight retained his interest in the Chicago enterprise, he has had nothing to do with the management of Dwight Brothers Paper Company since 1911, the year he came to Kalamazoo to assume the presidency of the Hawthorne Paper Company, a mill devoted to the manufacture of fine papers, ledgers, bonds, and writings. Just how close this plant came to being placed under government supervision is recalled by the incident in 1916, when Hawthorne underbid Crane and Company of Dalton, Mass., for the manufacture of government bank note paper. Hawthorne did not get the contract because a group of clever counterfeiters were busy at this time, and the government thought it best not to change mills.

Three brothers survive the original Dwight family. They are Walter E. Dwight, of the Dwight Brothers Paper Company, Chicago; Dr. C. E. Dwight of Madison, Wis., and Hawley E. Dwight, Rock Island, Ill.

Cost and Technical Divisions Meet

A meeting of the Kalamazoo divisions of the Cost and Technical Associations of the Paper Industry was held at the Community House of the Kalamazoo Vegetable Parchment Co., Tuesday evening, April 27th. The program consisted of three very interesting addresses delived by Messrs. Frank Libby, Thomas W. Peck and Ralph W. Hayward.

D. L. Kimberly, of the Kimberly-Clark Co., Neenah, Wis., has been elected president of the Neenah Rotary Club.

The Lenix Drive

(Trademark Reg.)

Seven 100 H. P. double headed motors driving beaters. Fourteen Lenixes used.

DURING the past year no fewer than TEN mills were added to the list of paper factories in the United States and Canada using the Lenix drive. The total number is now over SEVENTY.

In the installation illustrated there are seven 100 H. P. double headed motors driving fourteen beaters. Fourteen Lenixes are used. The short pulley centers not only possible, but preferable, with the Lenix have saved considerable floor space.

The Lenix relieves the double headed motor drive, horizontal or vertical, of all disadvantages found when the open drive is used. The tension in each belt of the unit is kept at a point just sufficient to transmit the load without slippage. This is an important point as the belts will not stretch the same and with the Lenix drive it is not necessary to stop both beaters to take up the stretch of one belt.

The Lenix automatically adjusts itself to variations in the load. Maximum efficiency and absolutely independent operation of each beater in the unit is obtained. Send for booklets.

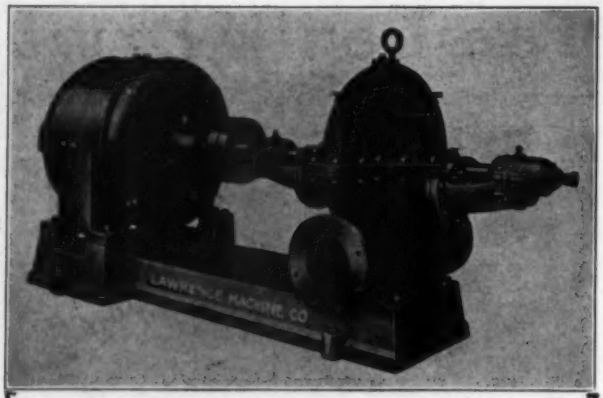
Saving Slippage and Space, and The Lenix Drive in the Paper Industry

See page 467 in the 1925 Paper and Pulp Mill Catalogue

F. L. SMIDTH & CO.

Engineers

50 Church St. New York, N. Y.



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

92c + 2 minutes = $1302.50

FACTS mean more than theory. What should happen or may happen is theory. What has happened is facts and a more reliable guide to what can be expected.

A large Paper Mill saved $1302.50 by investing 92c in Crescent Belt Fasteners. This is fact. The figures will be interesting to you. Write for them.

CRESCENT BELT FASTENERS

CRESCENT BELT FASTENER COMPANY
247 Park Ave. New York, N. Y.

MORSE SILENT CHAIN DRIVES

For your specific problem

Two 125 H.P. Morse Silent Chain Drives from motors to beaters. Drivers, 700 r.p.m.; Driven, 360 r.p.m.

The most exacting needs of power transmission and speed reduction are solved by Morse Silent Chain Drives. The flexibility of belts, the positive action of gears plus 98.6% sustained efficiency combine to give long life and economical operation.

One-tenth to 5,000 H. P., 6,000 to 250 r. p. m. and slower, ideal for short-center drives. Over 5,000,000 H. P. installed and many still serving after 15 and 20 years of satisfactory operation.

Morse Chain Co., Ithaca, N. Y., U. S. A.

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Charlotte, N. C.
Chicago, Ill.
Cleveland, Ohio
Denver, Colo.
Detroit, Mich.
Louisville, Ky.
Minneapolis, Minn.
New Orleans, La.
New York, N. Y.
Omaha, Neb.
Philadelphia, Pa.
Pittsburgh, Pa.
San Francisco, Calif.
St. Louis, Mo.
Toronto, 2, Ont., Canada
Winnipeg, Man., Canada
1145

Fitchburg Duck Mills
ESTABLISHED 1844
54 Duck Mill Road
FITCHBURG, MASS.
MANUFACTURERS OF
STANDARD AND MULTIPLE PLY
DRYER FELTS
English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 220 Inches in Width
Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

Ticonderoga Machine Works
TICONDEROGA, N. Y., U. S. A.
MANUFACTURERS OF
WARREN IMPROVED CALENDER DOCTORS
With Flexible Blades, Universal Adjustment and Control
(PATENTED)
WARREN IMPROVED PATENT DOUBLE DRUM WINDERS
Patent BALL VALVE Hydrant
Stock Circulating Systems *and*
other Paper Mill Specialties
SEND FOR OUR BULLETIN

BRITISH CORRESPONDENCE

Paper Industry Situation

Conditions in the British paper industry continue to be fairly satisfactory; a slow improvement in home demand is being shown, and export trade is quite good. The fine paper section is presenting a wider field for sale; but the newsprint section has the advantage as far as terms of tonnage are concerned. Greater care is being taken by the large export houses in the selection of suitable agents; but it is pointed out in trade circles that there is still room for co-operative effort on the part of the smaller manufacturers, whose products would probably be more efficiently handled by an international paper exporting agency.

It is reported that paper prices are hardening. Wood free papers are already higher in price by about an eighth of a penny per pound, since the decision was made to cover part of the increased cost of wood pulp. The present price scale is to be maintained for three months, then it may be necessary for the hardening process to be further increased.

Esparto paper manufacturers are paying 10 shillings per ton more for their grass than a year ago, esparto papers are therefore costing £1 per ton more to make. The rumors of the participation of United States buyers in the esparto traffic have proved to be false. Fears of increasing costs owing to this alleged increased use by American mills have been dismissed. The information having come to hand that the grass was bought for the purpose of replacing jute in the manufacture of hessian wrappers.

It has just been announced that an English syndicate is to establish a mill for the manufacture of vegetable parchment. Up to the present, this product has been entirely a continental monopoly, and Great Britain has imported large amounts from European countries.

Most of the up-to-date printing firms in the country are well pleased with the progress of the scheme for the adoption of standard methods of dealing with paper taken up by the Federation of Master Printers. It is reckoned as a big advantage that, under the new method, a printer will receive his raw material based on weights and prices per 1,000 sheets, just as he always quotes prices and invoices per 1,000 or per number of copies delivered. With the disappearance of the variable reamage, printers may well wonder why they have retained it so long.

The British wallpaper industry holds a strong position today, in respect of its power to compete successfully in most of the world's markets. This is particularly the case with the higher grades, such as the moderately priced, machine-made sets, as well as the distinctive fine-quality, block-printing patterns. Continuous advance has marked the post-war period, especially since 1921, both from the technological as well as the artistic side of production.

One result of this advance is shown in the better values which are offered today, both in the printing of the plainer and multi-colored sets, which involve over-printed effects, for gold and so on, and also in the form and color of the designs. In fact, the values today are better than they have been for over a decade.

According to an authority on the subject, many factors have contributed directly and indirectly to the progress of this essentially British industrial art industry. The steadier advance in the direction of closer working arrangements under one central direction of hitherto independent paper-staining firms is one factor; for this has been conducive to much economy, and has resulted in better selling arrangements in the overseas trade. Larger capital resources, too, have made it possible to purchase on more favorable terms raw material supplies from abroad, and the mills are better equipped. Every effort is being made to improve still further the rollers and running capacity of the machinery for obtaining finer printing results.

Continuous expansion of the export trade has been evidenced during the past four years. The total exports for 1925 of paper hangings, printed and embossed, were valued at £572,190, consisting of 127,945 hundredweight. This in-

"In Old Virginny"

About a year ago the West Virginia Pulp and Paper Company, well known makers of kraft, located at Covington, Virginia, became interested in the high speed beater question. Their investigation led to our reconstructing four old Holland type beaters into

DAYTON
High Speed Beaters

There is an old saying "Any good salesman can sell anything once, but old man performance makes all later deals."

We were, therefore, highly pleased to receive an order from Covington for six additional beaters on the strength of what the first four did for them.

We claim and numerous installations prove that the Dayton High Speed Beater accomplishes the following:

Heavier furnishes
Faster beating
Greater output
More uniform product
Saving in power
Saving in labor

Booklet of interesting data on Dayton installations, in other prominent mills available.

We Rest Our Case on Performance
D B & H
The Dayton Beater & Hoist Co.
Dayton, Ohio

"HILL CLUTCH"
MILL EQUIPMENT

Years of Service at Full Efficiency
— Not the First Cost
Is the dominant thought in the "Industrial Type" Gear Speed Transformer

Low Speed Side "Industrial Type" Speed Transformer

A nest of plain spur gears revolving in oil changes the revolutions per minute of the input shaft to some desired revolutions per minute of the output shaft. The power transmitted is the same in both shafts. The efficiency is higher than any other form of gearing.

It is the "short cut" from motor to machine or from shaft to shaft where speeds are widely different. It eliminates cumbersome speed changing devices and saves power losses.

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CENTRIFUGAL & ROTARY

These sturdy, bronze fitted, double suction pumps are particularly suited for all classes of water service. Durable and efficient. Send for Bulletin No. 30.

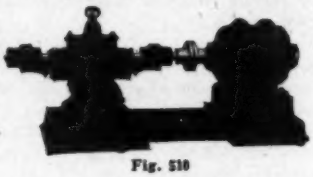

Fig. 510

TABER PUMP CO. Buffalo, N. Y.

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"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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A new metal, produced in the Whiting Cupola. Practically a pure pearlite iron of great strength and unusual physical qualities:

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Tensile strength:	50,000 to 65,000
Tensile strength at 800° F.	45,000 to 59,000
Elongation:	Up to 2%
Brinnell hardness:	Average 275

Being of very homogeneous structure, "Meehanite Metal" offers great resistance to corrosion and oxidation under varying conditions of temperature and pressure. This means it is especially suitable for many uses in paper mills.

We are now prepared to furnish "Meehanite Metal" castings for such applications.

Further details on request.

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(Subsidiary of Whiting Corporation)
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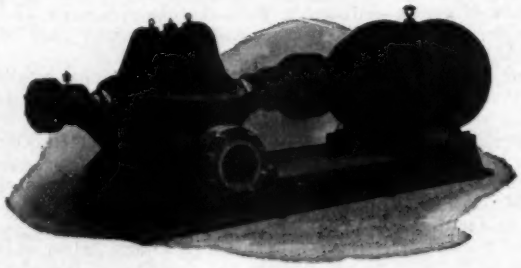
Sales Offices in New York, Chicago, Buffalo, Detroit and San Francisco

SWENSON

Aurora Centrifugal Pumps



Type OMD

Aurora pumps are made in many types, to meet all conditions found in the paper mill field.

We specialize in horizontally and vertically split open and inclosed impeller, single and multi-stage and deep well turbine centrifugal pumps as well as deep well reciprocating pumps.

A card from you stating your conditions places our engineers at your service and results in a saving to you.

AURORA PUMP & MFG. CO.
Home Office and Factories, Aurora, Ill., U. S. A.

creased export trade has been built up mainly on the higher class wallpaper, and most of the old, cheap patterns have disappeared.

Germany still has a fair proportion of the trade in the lower grade printed papers, and has a strong hold on the Spanish and South American markets; but, even in these markets, British exports have increased, particularly in the Argentine, where the leading importers are demanding better standards.

Woodpulp Manufacture

A new edition of Hofmann's **Practical Handbook of Papermaking** was published in two volumes in 1897. Additions to the volume are being published separately by the Verlag von Carl Hofmann GmbH. in Berlin Sw$_{11}$.

We have received the installment on Woodgrinding, the author of which is Dr. Johannes Teicher, who has been assisted in the work by Siegfried Schaal and Willi Gruenewald. It forms a book of 122 pages, exclusive of the advertising pages and is bound in boards. Price: 15 marks.

Descriptions and illustrations are given of all machinery and apparatus used in the manufacture of groundwood pulp, from stackers and washers to deckers and freeness testers. The various forms of magazine and continuous grinders, as well as pocket grinders, are fully described and a sketch appears of the first wood grinder invented by F. G. Keller. Pictures are provided of American inventions used in the wood pulp industry, American drum barkers, Green Bay barkers and some of the older forms of American pocket grinders being the subjects of illustration. The preparation of grindstones receives adequate attention and the entire volume is one that will be of great service to pulp mill superintendents who have any familiarity with the German language.

The previous volume of the Carl Hofmann Handbook, dealing with sizing, loading and coloring of paper stock should find a place with Teicher's section in every papermaker's library.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of the Paper Industry, published monthly at 356 Monadnock Bldg., Chicago, Illinois, for April 1, 1926.

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared E. B. Fritz, who, having been duly sworn according to law, deposes and says that he is the publisher of the Paper Industry, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, E. B. Fritz, 356 Monadnock Bldg., Chicago, Illinois; Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Illinois; Managing Editor, A. Scott Dowd, 356 Monadnock Bldg., Chicago, Illinois; Business Manager, E. B. Fritz, 356 Monadnock Bldg., Chicago, Illinois.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.): E. B. Fritz, 356 Monadnock Bldg., Chicago, Illinois.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

EDWARD B. FRITZ,
(Signature of editor, publisher, business manager, or owner.)
Sworn to and subscribed before me this 23rd day of March, 1926.
(Seal) S. J. LEHRER, Notary Public.
(My commission expires June 30, 1928.)

DeZurik Washers

Save Power, Floor Space and Bleach, and yet have clean converted paper stock. The DeZurik Washer operates entirely by gravity. An installation of this continuous washing and bleaching sufficient to wash 25 tons of stock occupies only 12x36 ft. floor space.

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for
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Six Rogers Wet Machines—Excellent Condition. One Practically Brand New Badger Webre—Total 6500 Square Feet—Triple Effect—Complete. Six Glens Falls Sulphur Burners—All Sizes. Phone—Wire—Write. Consolidated Products Co., Inc., Dept. H, 15 Park Row, New York City.

WANTED—Paper mill draftsman for immediate employment. Give complete experience and salary desired. Apply Box 95, The Paper Industry.

Paper Mill for Sale, near seaboard, equipped to produce 70 tons a week. Two lakes on 30 acres. Technical Service Co., Woolworth Bldg., N. Y. C. Whitehall 8412.

POSITION WANTED—By experienced Master Mechanic, successful in handling men and keeping down maintenance costs. Available for position in sulphate pulp or board mill. Excellent references. Address Box 93, The Paper Industry.

WANTED—Used Hollander Beater, 10 to 20 lbs. Address Box 94, The Paper Industry.

WANTED:—Experienced Chemist Engineer for Canadian Mill, capable of carrying on control and research work in connection with sulphite, groundwood, and Paper Mill Operation including complete control of color matching. Reply, stating experience and salary required, care of Box 90, The Paper Industry.

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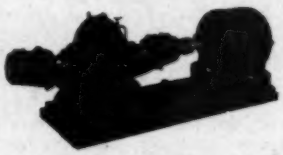

The Bethlehem Horizontal Centrifugal Pump is of the double-suction, single-stage type with horizontal split casings. Capacities 200 to 17,000 gallons per minute against heads of 20 to 250 feet.

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BETHLEHEM, PA.
General Sales Offices: 25 Broadway, New York City

BETHLEHEM

Complete Paper Mill Equipment

FOR

IMMEDIATE DELIVERY

Consisting of:

One Fourdrinier Paper Machine taking wire 112″ x 60′. Three presses. Sixteen dryers 48″ x 106.″ Two Farrel's latest calenders. Reel. Four drum winder. Self contained Marshall drive. Screens.

Variable Speed Engine Five Beaters
Two Jordans Pumps Cutters Motors

Machinery in excellent condition. Price attractive. For full particulars, write

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One 118″ Fourdrinier. One 84″ Fourdrinier.

DRYERS
Seventeen 36″x84″. Sixteen 36″x86″. Fifteen 28″x62″.

CALENDERS
106″ nine roll. 84″ nine roll. 72″ nine roll. 62″ seven roll. 64″ seven and nine roll.

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124″ Warren. 122″—102″—72″ Moore & White four drum. 82″—72″ Langston.

MARSHALL DRIVE
Complete Pusey & Jones drive for paper machine.

SHEET CUTTERS
110 Horne. 84″ Clark. 70″—54″ Moore & White. 60″—52″—48″ Hamblet.

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54″ Holyoke Seybold. One 44″. One 38″. One Twentieth Century Seybold.

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102″. Four 52″ Erie single.

Variable speed steam engine ERIE BALL 12x12x14 Revolvator.
Four 72″ Sandy Hill wet machines.
Two shredders, MITTS MERRILL No. 17.

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56″ seven roll Holyoke. Four 66″ Holyoke. One 45″ Norwood.

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104″—126″ Millspaugh with Connersville pumps.

STUFF PUMPS
Six Deane triplex 12x12.

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2 Jones 56″x57″. One Holyoke 60″x60″.

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Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce fo the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 19814—Papermaking machinery. Paris, France. Agency desired.

No. 19841—Lumber for pulp wood. Nantes, France. Purchase desired.

No. 19814—Paper pulp. Paris, France. Agency desired.

No. 19815—Vulcanized fibre. Paris, France. Agency desired.

No. 19979—Paper bags, medium grade. Guadalajara, Mexica. Purchase desired.

No. 19985—Old newspapers, overissues, in bales. Bombay, India. Purchase and agency desired.

No. 19967—Toilet paper. Antofogasta, Chile. Agency desired.

No. 19975—Paper, waterproof, duplex and innerstrung. Toronto, Canada. Purchase desired.

No. 19932—Wrapping paper in rolls and sheets. Santo Domingo, Dominican Republic. Agency desired.

No. 19938—Rotogravure paper for newspaper printing. Buenos Aires, Argentina. Agency desired.

No. 19948—Stationery and paper. Bombay, India. Agency desired.

No. 19981—Wall paper. Montreal, Canada. Purchase and agency desired.

No. 20006—Paper bags. Manila, Philippine Islands. Agency desired.

No. 19993—Bank note paper. Bogota, Columbia. Sole agency desired.

No. 20007—Wrapping paper. Vera Cruz, Mexico. Agency desired.

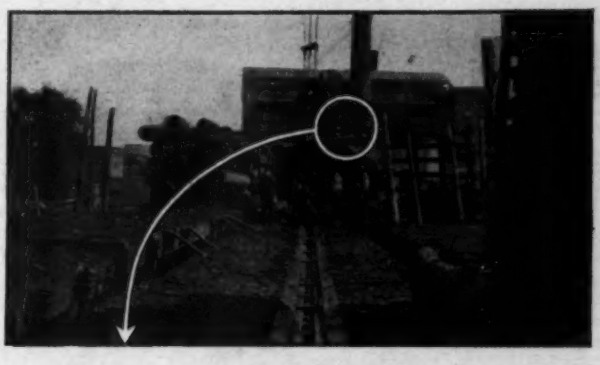
No. 20068—Paper of all kinds. Amritsar, India. Purchase and agency desired.

No. 20071—Overissued newspapers. Palembang, Sumatra. Purchase desired.

Copies Sent Free

The 1926 annual special number of the "Papier-Fabrikant," will be issued this year on the occasion of the meetings in Düsseldorf of the leading German pulp and paper manufacturers' associations. It will consist of about 300 pages. It is expected that the reading section will contain articles by Prof. Dr.-Ing. E. Heuser, Prof. C. G. Schwalbe, Dr. Rudolpf Lorenz, Ing. E. Belani, and others. The German machinery manufacturers will report on their latest discoveries and patents. Sources of supply or addresses of machinery manufacturers will be given in several languages, as German, English, French and Spanish, in order to facilitate correspondence and assure prompt action in the event of advertised articles being needed in haste. Requests for copies of the Festund Auslandheft of the "Papier-Fabrikant" should be addressed to the business manager of the "Papier-Fabrikant," Otto Elsner Verlagsgesellschaft m.b.H., Berlin S 42, Germany.—Adv.

The next meeting of the Paperboard Industries Association will be held at the New Palmer House, Chicago, Ill., May 26 and 27, 1926. On Wednesday, May 26, the Folding Box and Paperboard groups will meet. On Thursday morning, May 27, the Container group will meet. The joint meeting of the three groups will be held Thursday afternoon, May 27, at 2:00 p. m.



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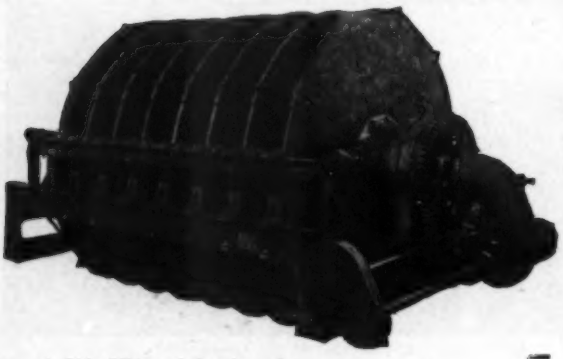

A Side View of the American Continuous Filter. The White Water enters the machine and is forced to pass through the discs which revolve slowly. These hold a Matte of Pulp while the cleared water passes through the machine.

Dollar bills float out of your mill and run down the White Water stream. They mount into many thousands every twelve months.

Before—nothing really effective could be done about it. Now—paper mills install American Continuous Filters and save practically *all* of the valuable fiber.

This American Continuous Filter is designed especially for paper mill work. Paper Machine White Water enters the machine and passes through the slowly revolving discs covered with specially woven wire.

The pulp is held on the outer sides of the discs and the water passes through the machine almost entirely free of valuable fiber. The pulp matte formed on the discs is an ideal filter medium for trapping the fine fiber ordinarily lost.

The water is so clear when it leaves the American Filter that it can be re-used in machine showers without danger of plugging.

When used as a thickener or bleach washer, its capacity is unusually high and fiber loss practically nil.

Ask to see a test of the American Continuous Filter. Our nearest branch office will set up a small portable outfit in your plant, and show you how a full sized one will make you extra thousands of dollars a year.

Write them for a demonstration.

One of the V-Shaped Sectors—ten of which make up a round revolving disc. This is illustrated to show that worn wire does not necessitate renewal of an entire disc. All one man need do is remove the sector where the wire is worn and replace with a new one. This takes but a few minutes' time. The old sector can be recovered or repaired and used again.

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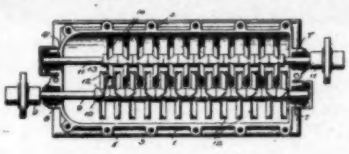
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Defibering Paper

IN THE accompanying illustration, there is shown an apparatus, which is patented in United States Patent, No. 1,579,461, and which is used for the purpose of defibering paper and like materials. The apparatus consists essentially of a casing, a hopper for feeding the materials and a liquid to one end of the casing, a discharge outlet at the opposite end of the case, parallel rotating shafts mounted in the case and propellers on the shafts. The successive blades on each propeller and the corresponding blades of the successive propellers being of opposite pitch.



Preliminary Treatment of Wood for Sulphite Digestion

During the process of sulphite digestion, the contents of the digester are brought up to a temperature of 105 degrees C. as quickly as possible, and then they are allowed to remain at this temperature for several hours, whereat by the addition of further amounts of steam, the reaction temperature is made to rise eventually to 120 to 145 degrees C. The maintenance of the temperature at 105 degrees C. for an extended period of time is for the purpose of causing the liquor thoroughly to impregnate the paper stock.

It must, however, be mentioned that impregnating the wood with a liquor is not complete even when the liquor has penetrated entirely through the mass of fibers. The digestion liquor must pass through a large number of cell membranes. But inasmuch as the cell membranes can absorb sulphurous acid as well as lime, the digestion liquor is gradually deprived of its active ingredients, and thereafter a liquor is made to penetrate the innermost parts of the wood chips, which liquor is not sufficiently concentrated. Then again, in order that there is present within the internal structure of the wood a liquor which contains the proper percentage of sulphurous acid and lime, fresh liquor must constantly be prepared by the process of dialysis.

However, in the time that is usually allotted to the impregnation process, it is impossible to attain a complete soaking of the wood with fresh sulphite liquor. The impregnation of the core of the wood ensues simultaneously with the disintegration of the fibers and, consequently, partly at a high temperature. This brings about the disadvantageous condition that the external part of the pieces of wood has been digested, while the interior of the wood has not come in contact with sufficient of the digestion liquor chemicals to bring about disintegration.

This, then, results in the formation of a resistant internal core of wood which cannot be reduced to the proper condition only after prolonged digestion. But when the core of the wood has been disintegrated, then it follows that the outer portions of the chips have been allowed to remain in contact with the digestion liquor for too long a time, and hence are over-digested. The net result is the obtaining of a certain amount of over-cooked and under-cooked fibers, which can be remedied when care is taken to see that the impregnation of the wood is complete. This can best be observed by the fact that the concentration of the digestion liquor in sulphurous acid and lime does not change any longer. This means that the absorption process has been carried out to a conclusion and a perfect equilibrium exists between the sulphate liquor and the wood chips.

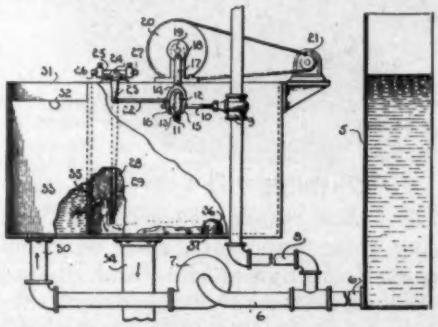
For example, a straw stock is treated with sulphite liquor which contains 1.8 per cent of lime and 3.7 per cent of total sulphurous acid. The impregnation takes at the ordinary temperature, or at a moderately elevated temperature, about 50 degrees C., and lasts for a period of ten hours. Then the temperature is raised to 140 degrees C. and maintained at that point for two hours.—The Paper Maker and British Paper Trade Journal, 1926, page 100.

Cellulose Waste Liquor

HYGROSCOPIC material present in sulphite cellulose waste liquor is separated by dialysis, is decomposed in the liquor, or is rendered non-hygroscopic by neutralization, or the lignin-sulphonic acid is precipitated free from hygroscopic material. For example, waste liquor from which iron and calcium compounds have been removed is treated, at a temperature of 100 degrees C., with sodium hydroxide solution, density 1.357. After some time, the liquor is neutralized with hydrochloric acid, and the non-hygroscopic constituents are precipitated by the addition of salt, filtered off, and dried in a vacuum. Alternately, the liquor is subjected to alcoholic fermentation and subsequently evaporated in a vacuum, or alsohol is added to it and the precipitated material is removed and dried, or it is heated with phenol, followed by the addition of hydrochloric acid and evaporation to dryness. French Patent, No. 592,119.

Regulating Paper Stock

IN UNITED STATES Patent, No. 1,577,555, there is described an apparatus for regulating the consistency of paper stock. This comprises a valve for controlling the admission of water to the stock. There are means provided to rotate in one direction and thus to open the valve and to rotate in the opposite direction to close the valve. This device includes a rock shaft for controlling the rotation of the shaft and a paddle secured to the rotatable shaft and means for directing a constant stream of the liquid against the paddle with a force varying inversely with the consistency of the liquid.



Sodium Hyposulphite in Paper Making

CHEMICAL pulp is manufactured with the aid of a cooking liquor which contains sodium hydroxide and sodium thiosulphate. The sodium hydroxide is employed in excess of the amount that is required to decompose the silicates and the aluminates in the material that is being treated. United States Patent, No. 1,572,840.

See page 391 in the 1925 Paper and Pulp Mill Catalogue

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PERKINS GRANITE PRESS ROLLS

Give Your Paper Machines greater speed
Surface remains true much longer
A better finish to the paper
No sticking of paper
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Fewer breaks
A drier sheet

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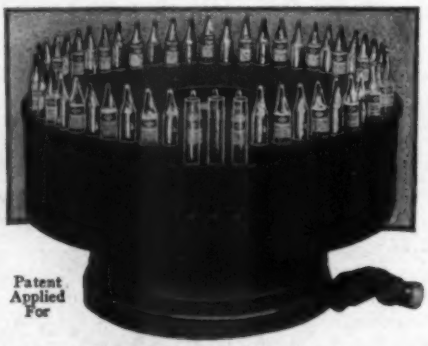

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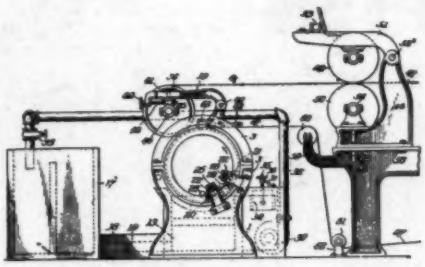
Papermaking Machine

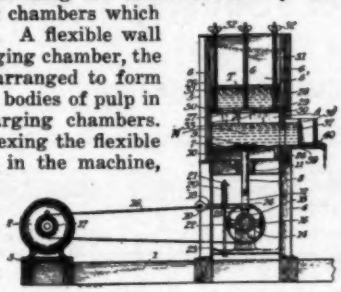
IN THE accompanying illustration, there is shown an improved papermaking machine, as patented in United States Patent, No. 1,576,126. This machine comprises a rotary forming member, a vat or tank for the pulp, which is fed to



the forming member. There is also a suction device for stripping the paper web from the forming cylinder. This device consists of a suction box which is arranged in position on the outer side of the cylinder and close to the same so as to exert suction force on the paper web before it actually leaves the cylinder.

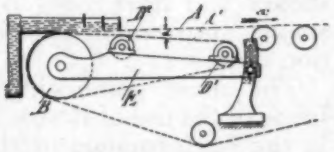
Testing Paper Stock Fiber

THE illustration shows an apparatus which is employed for the purpose of testing paper stock fibers. It consists of a tank and a screen (30) dividing the tank horizontally into receiving and discharging chambers which are adapted to hold pulp. A flexible wall is arranged in the discharging chamber, the walls of the tank being arranged to form an air pocket between the bodies of pulp in the receiving and discharging chambers. Means are provided for flexing the flexible wall to agitate the pulp in the machine, thus creating suction to draw the pulp from the receiving chamber through the screen into the discharging chamber. For further details, see United States Patent, No. 1,580,167.



Paper Making Machine

UNITED STATES Patent, No. 1,577,897, is concerned with an improvement in a Fourdrinier papermaking machine, which consists of the combination of a wire which travels around a breast roll, and an endless perforated web through which consists of the cominside of the wire traveling likewise around the breast roll. This web accompanies the upper section of the wire underneath in contact with the same on a part of its way towards the suction boxes.



The Chemistry of Sulphite Digestion

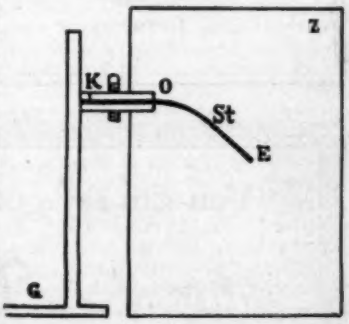
SEVERAL experiments were made with the purpose of following up more closely certain details concerning the chemical mechanism of the process of manufacturing sulphite wood pulp. The wood that was employed in the process had the following composition: Cellulose 41 per cent, mannose 2.8 per cent, xylose 2.1 per cent, fructose 1.2 per cent (the total sulphite cellulose being 47.1 per cent); lignosane 22.6 per cent, lignin 28 per cent, resins, ash, and protein matter 2.3 per cent. Various observations showed that the lignin and the carbohydrates in the wood are chemically combined. The action of the digestion liquor is explained to be an addition of sulphite to and the hydrolytic splitting of the lignin-sulphonic acid-carbohydrate compound. If the first reaction proceeds at a greater speed than the second, then the ash and the organically combined sulphur present in the wood residue are increased. The lignin can absorb more of the sulphur dioxide than is to be expected in accordance with the Klason theory. This phenomenon takes place when digesting the wood in highly concentrated sulphur dioxide containing liquors.

From this fact, it follows that the lignin molecule contains more than one ethyl compound. A number of observations are also made in the original article, which is published in Papier Fabrikant, volume 23, pages 399-405, on the results obtained from the analysis of the sulphite liquor, the color of the liquor and the removal of samples by means of a cooler, as far as the control of the digestion operations are concerned. Black cooking is explained by the fact that the stock apparently absorbs precipitated products of lignin and its sulphonic acids from the digestion liquors at particular stages in the cooking operation.

An investigation was also made on the influence of the disappearance of the sulphite lime in the digestion liquor and the relationship that exists between the sulphite and the free sulphur dioxide in the liquor, and the properties of the finished pulp and paper, particularly the strength of the latter. It is noteworthy that a higher content of sulphur dioxide also has the effect of increasing the folding number of the paper that is made from the pulp obtained under these conditions. The relation between the yield of pulp, the digestion liquor composition and the temperature is also explained.

The Stiffness of Paper

THE first point to be considered in connection with the stiffness of paper is just what it is that is being determined; in other words, what is the meaning of the stiffness of paper? For this purpose, strips of one centimeter width are cut from the paper sheet, and an equal number of strips are cut in the length and then across the grain of the paper. The strips must be about twenty-five centimeters long and a distance of twenty centimeters is marked off from one end. A board on which this paper is fastened in a suitable manner is then made to stand upright, as may be seen in the accompanying figure. In front of this board there are arranged a number of clamps. The exact height (O) must be marked on the paper sheet, corresponding to the extreme end of the clamp. A strip of paper is then clamped in such a manner that exactly twenty centimeters of the paper strip project out from the end of the clamp. Then when subjected to weights, the form of the paper strip is that of a parabola. According to the stiffness of the paper and the weight of the same, this curve is more or less sharp. Hence, in examining papers whose weights are the same, the form of the parabolic curve will indicate the relative stiffness of the paper.



In the original article, which is contained in Zellstoff und Papier, 1926, pages 77 and 78, there is also contained a mathematical discussion of the significance of the curve and a table is given indicating the stiffness factors of certain definite types of paper.

Removing Gases from Sulphite Digesters and Recovering Them

GERMAN Patent, No. 425,195, described an apparatus and process for the removal of the gases that are generated during the process of making sulphite pulp, and for recovering the sulphurous acid that is contained in them as well as utilizing to useful purpose the heat in them.

In the figure, the pulp digesters are indicated as (A), (B) and (Z). The waste gases from these digesters are drawn off in the pipe line (4) and (5). The fresh digestion liquor flows through these same pipes. The injector-like connection points

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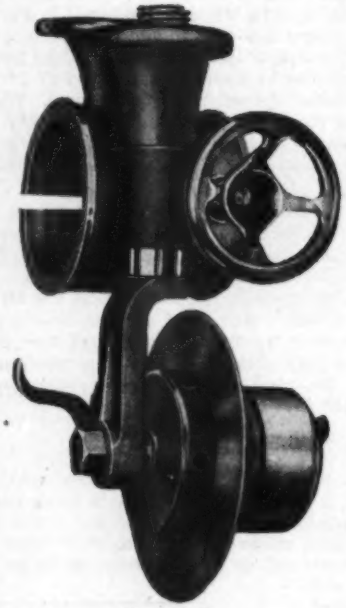

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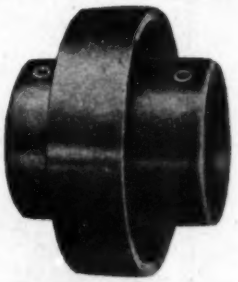

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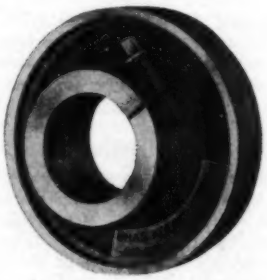

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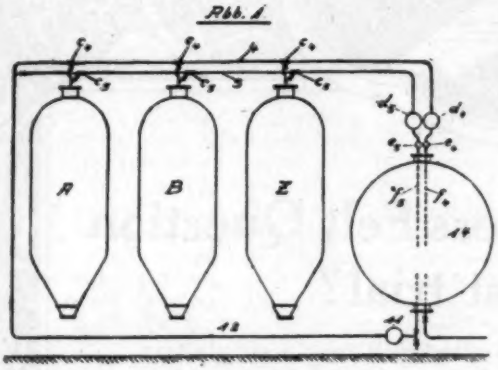
are marked by (c_4) and (c_5), these being located in the liquor and gas pipelines. The gases and vapors are sucked into and through the liquor lines (4) and (5). At least one of the pipelines can also be a gas-vapor line. The pumps that are employed in this system are indicated at (d_4) and (d_5). These pumps force the liquor through the return-action valves (e_4) and (e_5), feeding it to the liquor storage tank.

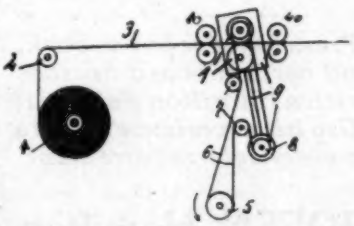
The liquor is introduced into the tank through the inlet pipes (f_4) and f_5) in which the gases, which are condensable,



and the vapors are mixed with the liquor in order to form a solution of certain definite properties. The liquor storage or accumulating tank also acts therefore as a heat storage or accumulator. Due to the pressure in the storage tank (14), or by means of a pump (11), or also by means of both, the liquor can be forced through the pipe-line (12) and (4) as well as (5). In this manner, the pump (d_4) or (d_5) can be used to force the liquor back again into the heat accumulator or help other means in doing so. In this way the liquor in the heat accumulator (14) can be warmed up.

Interruption of Moving Paper Web

IN MANY machines, which are used for the purpose of making paper webs or of working them up in one form or another, it is often necessary to interrupt the movement of the paper webs at certain definite time intervals for the purpose of carrying out certain well defined operations, such as cutting the paper and the like. But it is also necessary that the paper be fed to the machine in question in an uninterrupted manner, so that the operation of the machine is not disturbed and so that the paper web is not subjected to undue tension.

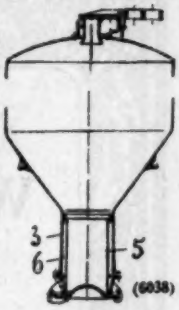


In order to be able to accomplish this, the device, which is patented in German Patent, No. 423,456, has been invented. This affords the traveling paper web a chance to stop in its travel through the machine by means of an arrangement which moves it in a vertical direction. The apparatus used is shown in the accompanying illustration.

As can be seen from the figure, the pair of rolls (1) draws the paper web (3) over a guide roller (2), unrolling the roll of paper at (4). The latter roll and the guide roller (2) are arranged in such a manner that the paper web runs from the latter between the pair of rolls in a straight line. The pair of rolls (1) is driven from the pulley (5) which rotates at a constant rate of speed. The driving belt (6) is led over the guide rollers (7) and a pulley (8), which is arranged vertically or almost vertically with respect to the pair of rolls (1). The pair of rolls (1) and the pulley (8) are arranged so as to be shiftable vertically or almost vertically with respect to the direction of travel of the paper web. As long as the pair of rolls (1) and the pulley (8) remain stationary at one position, as the driving pulley (5) is uniformly rotated, the paper web moves along at a uniform rate of speed. However, if the pair of rolls (1) and the pulley (8) are moved vertcially or almost vertically with respect to the direction of travel of the paper web, then the number of revolutions made by the rolls (1) is altered in accordance with the speed of this movement and its direction, which means whether it is upwards or downwards. If the rolls (1) and the pulley (8) are moved upwards, then the speed of the driving roll is increased, and if the movement is downwards, then the speed is decreased. German Patent, No. 423,456.

Pulp Digester

THE pulp digester which is seen in the accompanying figure, is patented in German Patent, No. 388,214. The digester is made in the form of a cylinder, the lower part of which is shaped like an inverted truncated cone. Another smaller cylinder is riveted to the lower end of the truncated cone section. This discharging cylindrical section is seen at (3). Inside of this section there is found a screen which is also cylindrical in shape. There is an annular space (6) between the lower cylinder and the cylindrical screen.



Determination of Dry Weight of Hydraulically Pressed Mechanical Wood

AN INTERESTING article has been published in Number 22 of the Pappers-och Traevarutidskrift foer Finland on the determination of the dry weight of fibers in mechanical wood pulp that has been pressed in a hydraulic press.

In carrying out the investigation, the author states that in a suspension of mechanical wood pulp the solid phase is partially so finely dispersed that it is possible to speak of it as being in a colloidal state. A part of the wood substance is molecularly dispersed, for it is a fact that in the grinding operation, the carbohydrates go into solution partially. The colloidal character of the mechanical wood pulp is induced by the mechanical operations to which it is subjected particularly during the dehydration process.

The dry content of the pressed wood pulp depends on the pressure to which it has been subjected, the duration of the pressing, the slowness of the stock and the temperature of the stock. The sheets of pulp between the steel plates vary considerably in dry content. However, the percentage moisture in the sheet decreases or increases continuously from the middle of the entire mass outwards towards the steel wire, and is dependent on the slowness of the stock, the pressure and duration of pressing. Zellstoff und Papier, 1926, pages 76-7.

Treating Pulp

A NEW improvement in the process of preparing paper pulp for bleaching consists in treating the pulp at approximately the normal temperature with a reagent which is capable of converting the impurities contained in the pulp into water soluble compounds. These solubilized impurities are then washed out of the pulp. The process is patented in United States Patent, No. 1,579,525.

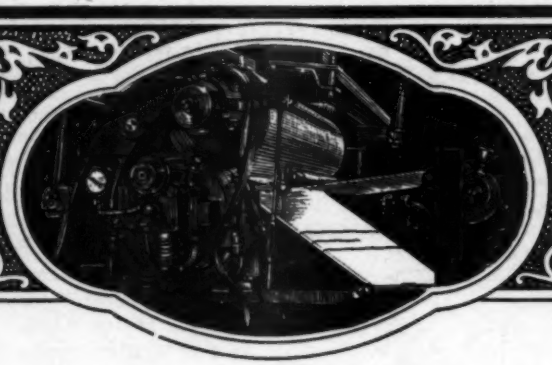
Marbleizing Paper

THE paper surface is marbleized by coating the same with one liquid agent and then, before the coating dries, applying a second liquid agent to the surface at localized points. One or both of these agents will contain a certain amount of coloring matter, and one will also contain a small amount of hard soap. The process is patented in United States Patent, No. 1,579,872.

Making Pulp from Low Grade Woods

IN AN article which appeared in Zellstoff und Papier, 1926, pages 75 to 76, there are described some practical results obtained in a Russian pulp mill in working up moldy wood into pulp. It was possible to work up this low grade stock into a very satisfactory wood pulp.

The wood was floated down to the mill and arrived there in



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See page 482 in the 1925 Paper and Pulp Mill Catalogue

an extremely wet condition. The wood was composed of fibers which were spotted blue and red to the extent of 50 per cent of the entire mass, indicating that a very marked change had taken place in the woody structure. The thickness of the logs was about two hundred millimeters on the average. The weight of one cubic sasken (one sasken equals about 2.13 meters) with a moisture content of 27.6 per cent, was about 210 pud (one pud equals 16.375 kilograms).

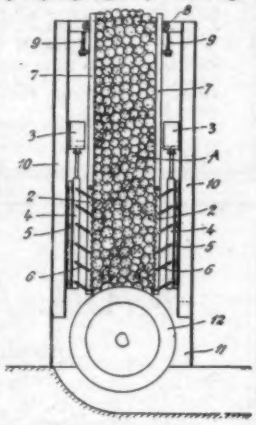
When the wood was chipped, it was found that 1.06 per cent of branch wood was obtained and 4.08 per cent of small pieces and skivers, which is about normal.

Ten digestions were carried out with this stock. The average analysis of the digestion liquor was as follows: Total sulphur dioxide, 3.1 per cent; free sulphur duoxide, 2.09 per cent; lime, 0.88 per cent. The average time of digestion was 12.6 hours in the case of a 133 cubic meter digester and 15.9 hours in the case of an 84 cubic meter digester.

The yield was 5,450 pud in all, of which 5,372 pud were of first quality and 78 pud of third quality. All the digestions gave an easy-bleaching pulp. In a majority of the cases the color of the pulp was white, and in no case was the color any darker than usual. The paper obtained from the pulp was of high quality and possessed very satisfactory mechanical properties. Details on the quality of the paper and on the yields are given in the original article.

Magazine Pulp Grinder

AS MAY be seen from the accompanying figure, the magazine wood pulp grinder, which is patented in United States Patent, No. 1,577,762, comprises a rotating grindstone shown at (12), and a shaft-shaped magazine (7) for the logs that are to be ground. There are two sets of longitudinal members forming at least a part of the walls of the magazine and there are log-gripping means (4) which are arranged to grip the sides of the logs in the magazine. Means are also provided to reciprocate the two sets of members so that those of one set move towards the grindstone while those of the other set move away from it and vice versa.



Sizing of Boards

IT IS a very difficult matter to size paper board so that it is absolutely size-fast. In fact, it is claimed that this is impossible. The sizing of board is therefore a problem which possesses far greater details than the sizing of paper. Much larger quantities of rosin are required for this purpose, as while a good grade of writing paper can be obtained with the use of three per cent of rosin size, the same quantity of rosin produces a board only one-quarter sized.

The causes of defective sizing of boards are very varied. The properties of the water are of particular importance. One reason why paper is so much easier to size than board is that the drying process has a very potent action on the rosin in the paper fibers and enhances materially the sizing quality of the paper. In fact, the action of the heat of the drying cylinders is what determines the sizing of the paper, for it has been proven that when the drying operation is not carried out at the proper temperature, in spite of the fact that sufficient rosin and alum may have been used in the heaters, the paper is not properly sized. It has been pointed out that a sort of sintering of the rosin must take place during the drying process, if a properly sized paper is to be obtained. It has also been brought out that it makes quite a difference whether the paper runs loose on the cylinder, or whether it is pressed upon it by the felt, or whether it sticks in the still moist condition to the roll, as it does when on the reels. In the first case, vapors collect between the paper and the cylinder and lift off the sheet when the pressure becomes too great, or when the paper is too air-tight. In the second case, this effect is not possible, provided that the necessary care is taken to leave the sheet on the polished surface of the cylinder long enough to form the glaze. Under these conditions, the steam has the power to press the rosin, which has been melted, into the fibers of the paper.

However, when treating boards the conditions are essentially different. The main object is the process of drying. In air drying, melting of the particles of rosin is not possible, nor in the system of tank drying, with the aid of warm air. It almost works out that the board requires more rosin for sizing than the paper.

Another important factor in this connection is the selection of the stock that is used in making the paper board. If the stock is porous, the sizing is more difficult to carry out than if it were constituted of shorter and thicker fibers. The reason for this is found in the fact that the addition of alum converts the rosin size into a flocculent mass and if the paper fibers are too porous the finely divided rosin is allowed to penetrate through them and escape retention. The result is that a lot of rosin is wasted before a proper sized board is obtained, and the costs involved are considerable.

It is well to mention here that thin paper is known to be harder to size than thicker papers. The reason for this is that there is not sufficient mass of fibers present in the thin paper properly to retain the size particles as there is in the thicker paper. For further details see Pappen und Holzstoff Zeitung, 1925.

Sizing Paper with Rosin

THE precipitation of the rosin soaps which are used in the sizing of the paper fibers is always accomplished with the aid of alum or sulphate of alumina in an acid medium. This acidity, to which the pulps are subjected, is very objectionable and prejudicial to the keeping qualities of the paper. It is also harmful to the machines in which the paper fibers are matted together into the form of a paper sheet and causes various difficulties to arise in the sale of the paper and in its use for various purposes. It also has a harmful effect on the use of certain coloring matters in the sizing of the paper fibers.

It is possible without exercising any damaging action on the precipitated milk of rosin, to neutralize the mass after the precipitate has been formed. The neutralization, either total or partial, of the acid is effected with such substances as calcium carbonate. This substance will form with the acid a neutral compound which does not attack the resinous precipitate.

The paper pulp, which has been sized in the beater, is then further treated while the insoluble resinous precipitate is being formed. While the mass of fibers is still in the beater, powdered chalk is added in the proportion of one kilogram per kilogram of 66 degree Be acid which has to be neutralized. The white, insoluble precipitate of calcium sulphate remains in the paper and acts as an inert filler. French Patent, No. 577,349.

Regenerating Black Liquor

UNITED STATES Patent, No. 1,580,269, is concerned with a process for the regeneration of black liquor recovered from the process of manufacturing sulphate pulp. The method consists in destructively distilling the solid matter in such liquor, heating the residual salts with lime and carbonaceous material sufficient to reduce the sodium sulphate present. The temperature is maintained above the minimum required to reduce the sulphate in the presence of lime and below the temperature at which calcium carbonate dissociates. The product is then lixiviated.

Hydration Process in Papermaking

UNITED STATES Patent, No. 1,578,405, describes a process for the making of paper in which hydration takes a part. The fibers are prepared for papermaking by beating them and jordaning them in water which contains cold dilute soluble caustic alkali and then sizing the fibers by a special series of operations in which the alkalinity of the fibers is neutralized.

V. D. SIMONS
Industrial Engineer

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ROBINS CONVEYING BELT COMPANY
New York Chicago Pittsburgh Boston

New York, May 1, 1926.

THE paper market is not over-active, as the saying goes, nor is it dull. Business is developing in somewhat medium volume, aggregately speaking. There is a very healthy tone existing as regards the scope of current buying, it being quite evident consumers are satisfying urgent needs only, and the market situation as a whole is passably satisfactory, although, from the point of view of the manufacturer, there is considerable that could be longed for. In this connection it can be stated profits being realized by a majority of producers of paper are comparatively slight. Competition in marketing their product, a rather limited market outlet for many classes of paper, foreign supplies, and other factors are creative of a good deal of difficulty for papermakers at present, yet when all is said and done, the probabilities are the paper manufacturers of the country likely are more fortunate than are numerous other groups of manufacturers today.

It cannot be denied a wave of mild depression is sweeping over the United States. Perhaps it is largely sentimental or psychological, but nevertheless business in most lines is far from active. Consumers appear to have pulled in their ropes and to be spending money very cautiously; our export trade is not what it should be in point of volume of movement of merchandise out of the country, while the situation in the financial world has been such as to have at least some quieting influence on general business. In view of this, it is repeated that paper manufacturers—as a class—are enjoying probably greater activity in their markets than are most other producers of manufactured commodities. Some kinds of paper are in relatively slow demand; others are wanted in nothing more than routine normal volume, yet there are one or two classes of paper which are moving in heavy tonnage, so much so that they serve to put the paper manufacturing industry as a whole on a fairly active and prosperous plane.

As a general thing, manufacturers are endeavoring to keep production down within the limits of actual demand. This is helping to sustain prices, of course, and indicates a great amount of wisdom on the part of manufacturers, since there seems little doubt were production allowed to run rampant at present, prices would be seriously affected. As it is, market levels are holding fairly steady. Here and there slight downtrends in quotations have been noted but they have not been of important scope. Raw material conditions are improving—from the point of view of the manufacturer. Wood pulp holds firm in price but paper mills are buying other raw materials—very nearly without exception—at cheaper figures, which probably is enabling them to realize a bit more profit in marketing their product.

Production of newsprint in the United States and in Canada probably established a new high record during March. Mills in the U. S. produced 145,910 tons of newsprint and shipped out 142,666 tons in that month, according to the News Print Service Bureau, while Canadian mills made 154,093 tons and shipped 153,157 tons, the two countries combined manufacturing a total of 300,003 tons and shipping 295,823 tons. There were also 14,341 tons of newsprint made in Newfoundland, with 1,160 tons made in Mexico, so that the total North American production in March, 1926, was 315,504 tons. The newsprint mills also made 1,311 tons of hanging paper in March, 430 tons of which were produced in Canada.

During March the U. S. mills operated at 95 per cent of rated capacity and the Canadian mills at 96.4 per cent. The United States mills made 12 per cent more in the first three months of this year than in the same period of 1925, and the Canadian mills produced 18 per cent more than in the first quarter of last year. The combined production of the United States and Canadian mills in the first three months of 1926 was 15 per cent more than in the same period of 1925. Stocks of newsprint at U. S. mills totaled 18,352 tons at the end of March, and at Canadian mills were 14,800 tons, making a combined total of 33,152 tons, which was equivalent to 2.9 days' average production.

The monthy statistical report of the American Paper and Pulp Association and affiliated organizations put the total production of paper and board of all kinds in the United States during February at 523,657 net tons, compared with 546,820 tons in January, recording a decline of about 3 per cent. All grades showed a decrease in output in February compared with the preceding month excepting slight increases in tissue paper, hanging paper and bag paper. The decline, however, was attributed to February being a shorter month than January. The report shows that the total shipments of paper from mills decreased from 548,732 tons in January to 524,034 tons in February, while stocks of paper of all kinds at mills at the end of February amounted to 220,548 net tons, against 222,171 tons at the end of January.

Demand for newsprint is reported holding up to a high level. Mills are operating at close to maximum capacity; in some cases, in fact, they not only are running full but are actually exceeding their rated capacity, and the movement of supplies into consuming channels is on a big scale. Consumption is heavy. Publishers in all the large cities of the country are printing big issues, and circulation is well maintained by practically all the newspapers. There are no signs of any surplus supply effecting the market; instead, if anything, consumers are having some difficulty getting all the newsprint desired.

Book paper is in fair call. It is true most of the movement from mills is on contracts but the fact remains supplies are being absorbed, and the market exhibits a good deal of steadiness. Prices have not changed though there have been reports of some shading of quotations where tonnage has been involved.

Coarse papers are in routine demand. There is no feature to the market; buyers are placing orders when in want of supplies but mostly are purchasing in small lots. Tissue is steady in price and is enjoying at least normal market activity. Fine papers are sought in consistent fashion, though in comparatively limited volume. Jobbers and consumers alike are ordering from mills in piecemeal manner, buying today what they require tomorrow, and the great bulk of orders call for small lots. However, prices are firm, and certain lines of bonds and ledgers have been moved a bit higher by manufacturers.

The market for box boards is quiet. Business of routine character is developing but demand lacks snap as well as volume. Box manufacturers and other consumers appear to be working off stocks on hand and are placing new orders merely when pressed by necessity.

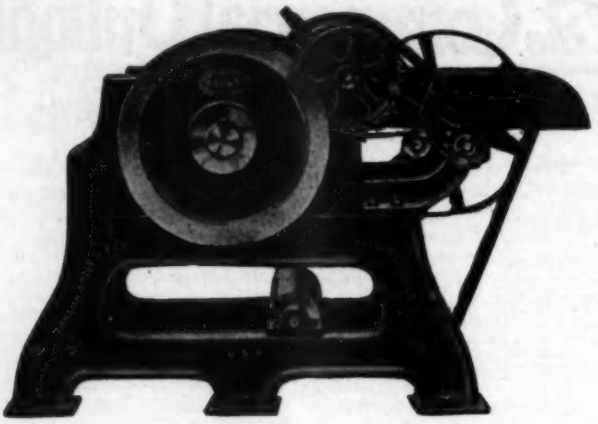
Chicago Tribune Announces Plans for New Plant

The Chicago Tribune is planning an additional step towards a great newspaper plant and office building 220x300 feet, in the immediate erection of a spacious addition to their magnificent tower which already stands as a monument.

This first of the new structures will be 118x132 feet, consisting of three basements and a pressroom floor, and is being planned to support the future structures.

Twenty new press units have been planned for the new building, making eighty in all. This will give a capacity of 1,000,000 Tribunes daily, as compared with the present practical limit of 730,000. The Sunday edition, it is said, will be increased from the present capacity of 1,250,000 to 1,400,000.

Plans have been perfected for 170 press units when the building program is completed. This will give a capacity of 1,600,000 daily, and 2,200,000 Sunday.



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Domestic Raw Materials

Papermaking Rags

Papermaking rags of practically every grade continue in a weak price position. Not in a long time has the market been so very easy in all of its branches; ordinarily when some paper mills are not buying there are others absorbing supplies, with the result certain classes of rags are moving, but at present there is a lack of important activity in any part of the market and prices of all descriptions of rags used by papermakers are on the downtrend. Such buying as paper manufacturers are engaging in concerns immediate requirements only, so it would appear, and the orders placed seldom call for other than small lots. Sentiment among dealers and importers is shaken; it is asserted there is no profit in handling rags at prevailing market prices, and, while it is difficult of course under the circumstances to say what is likely to happen in the near future, it must be stated the outlook at the moment is anything but favorable from the point of view of the seller of rags.

The present situation, it would seem, is based on one all-important factor, and that is, too many rags have been imported into the United States. As some representative dealers put it, imports of papermaking rags during the last six months, and probably a year, have been about 25 per cent in excess of the actual requirements of the paper mills of this country. Consequently a surplus of supply has been created, and consumers, realizing this fully, have curtailed buying except to fill direct wants. Prices have slid, sagged and broken over a period of months until market values of some grades of rags now are less than 50 per cent of what they were half a year ago. And, furthermore, there are plenty of signs indicating unsold stocks are heavy, which of course will have to be liquidated before any appreciable rise in prices can be expected. Also, this is the time of the year when demand is lightest; that is, insofar as regards any forward buying, because paper manufacturers realize collections during the spring and early summer are heaviest and therefore do not exert themselves in buying other than against prompt needs.

Roofing stock—the lowest quality of papermaking rags—recorded a sharp decline in price during April. There was some "dumping" of supplies onto the market, and the effect was the same as is customary under the circumstances, values breaking rather badly. No. 1 domestic roofing rags are quoted at present at 1.50 cents a pound f.o.b. dealers' shipping points, while No. 2 packing is available to mills at 1.30 cents. Perhaps some buying has been done under these rates; as a matter of fact the market is so weak and unsettled there is no saying just how low buyers have been able to operate. If anything, domestic roofing rags have displayed relatively greater firmness of tone than has foreign stock, and yet there has been little show of steadiness or firmness even in domestic packing. Foreign dark cottons are quoted at 1.35 cents a pound ex dock New York, and foreign linsey garments at 1.50 cents, though importers as a rule are inclined to ask a little above these figures.

New cuttings are tending downward in price and any changes noted in quotational levels recently have been in this direction. The market for such rags is narrow. Fine paper mills are buying in a spotty manner only and in small volume; also the great bulk of demand is for a few certain grades of cuttings. Dealers quote No. 1 white shirt cuttings at 12 cents a pound f.o.b. shipping points, fancy shirt cuttings at 6.75 cents, light silesias at 9 cents, unbleached muslins at 12 cents, blue overall cuttings at 8.50 cents, and washables at 5.50 cents. Of course, prices vary somewhat, depending on the quality of packing and the quantity involved, some dealers asking well above the aforenamed figures.

Old whites and thirds and blues are in slow call, and receding in value. No. 1 repacked whites are reported available at around 7 cents a pound at dealers' points, and some packings can be bought well below this level, while No. 2 repacked whites are quoted at 4 to 4.50 cents a pound. Repacked thirds and blues are offered freely to paper mills at 3 cents or slightly higher, and miscellaneous packing of blues are available at 1.75 cents per pound.

Foreign rags, other than roofing grades, are neglected by consumers. Paper manufacturers evidently are covering their needs with domestic stock and occasionally buy imported material. Prices are mainly nominal, and in most cases are on lower levels than were last reported.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.50
White shirt cuttings, No. 2	9.00- 9.25
Fancy shirt cuttings	6.75- 7.00
Washables, No. 1	5.50- 5.75
Unbleached muslin	12.00-12.25
White lawns	11.50-11.75
Overall cuttings, blue	8.50- 8.75
Black silesias	4.50- 4.75
Light flannelettes	10.00-10.25
Canton flannels, bleached	10.75-11.00
Canton flannels, unbleached	10.50-10.75
Shoe cuttings, bleached	11.75-12.00
Shoe cuttings, unbleached	10.75-11.00
Light silesias	9.00- 9.25
O. D. khaki cuttings	6.50- 6.75
Mixed khaki cuttings	5.50- 5.75
Corduroy cuttings	4.25- 4.50
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.50-14.00
Light prints, extra, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.75- 7.50
Whites, No. 2 repacked	4.00- 4.50
Whites, house soiled	2.50- 2.75
Whites, street soiled	2.00- 2.25
Lace curtains	6.25- 6.50
Thirds and blues, rough	1.75- 2.00
Thirds and blues, repacked	2.85- 3.00
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.50- 5.75
White cotton battings	4.25- 4.50
Roofing, No. 1	1.50- 1.60
Roofing, No. 2	1.30- 1.40
Dark colored cottons, foreign	1.35- 1.45
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.85- 2.00

Rope and Bagging

The feature of the old rope and bagging market is the steadiness in prices of domestic old manila rope. With almost every grade of papermaking raw material declining in value, and marked by a slow demand from consuming quarters, domestic old rope stands out while selling freely to mills and displaying pronounced price firmness. Dealers report they are getting 5.75 cents a pound at shipping points without difficulty for prime old manila rope of domestic origin, and it appears probable that a little in excess of this price has been paid in some instances. On the other hand, foreign old rope is neglected by consumers, and those few manifesting interest offer prices which importers say are too low to permit the profitable importation of the commodity. About 4.75 to 5 cents a pound ex dock New York is the price range on foreign rope but few buyers are in evidence. Strings

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have moved off in price, and are favored with less than routine demand.

Prices of old bagging have declined. Consumers seem imbued with the idea that with raw jute and new burlap on a much lower cost level as a result of sharp reactions in prices in recent months they should secure scrap burlap at cheaper figures, and have cut their bids accordingly. No. 1 scrap bagging is reported bringing about 2.50 cents a pound f.o.b. shipping points, and roofing bagging about 1.25 cents per pound. Scrap gunny bagging is quoted at 3.75 cents upwards at points of shipment.

F.o.b. shipping point and ex dock New York quotation follow:

	New York and Chicago
Gunny, No. 1 domestic	3.75-4.00
Gunny, No. 1 foreign	3.75-4.00
Scrap bagging, No. 1	2.50-2.75
Roofing bagging	1.25-1.35
Wool tares, heavy	3.75-4.00
Wool tares, light	3.50-3.75
Manila rope, No. 1 foreign	4.75-5.00
Manila rope, No. 1 domestic	5.75-6.00
Sisal strings	2.50-2.75
Mixed strings	1.50-1.75

Mechanical Pulp

Mechanical pulp is selling freely, reports say, and the market is rather in favor of sellers. Practically all the current output is finding its way into consuming channels without delay, and it is a fact, according to some members of the trade, buyers are experiencing difficulty locating all the supply they are interested in. The heavy consumption reflects the brisk operations of newsprint mills, and it is contended that so long as print paper production keeps on its present large scale ground wood is destined to remain in a strong market position.

Domestic manufacturers are quoting in the vicinity of $34 a ton f.o.b. pulp plants for prime spruce ground wood, and it can be said little tonnage is offered by U. S. grinders because they either are using up their production themselves or else have it sold ahead on contract. Canadian producers are getting $30 to $32 a ton at shipping points for ground wood, and sometimes more, prices depending on the air-dry test and the freight to consuming centers. Foreign ground wood of Scandinavian origin is quoted at $36 to $39 a ton ex dock New York for wet pulp, and $40 to $43 for dry.

Production of ground wood in the United States in February totaled 86,778 tons, contrasted with 96,173 tons in the preceding month, according to the monthly report of the American Paper and Pulp Association, while mill stocks at the end of February amounted to 122,533 tons, against 126,162 tons at the end of January.

Exports of ground wood from Canada in March reached a total of 27,095 tons, valued at $767,752, showing an increase over the 24,625 tons of a value of $720,699 shipped in January, while exports during the first three months of this year were 84,716 tons, valued at $2,564,680, against 71,869 tons of a value of $2,133,062 in the corresponding time a year ago.

Chemical Pulp

Chemical wood pulps are firm in price with the lone exception probably of bleached sulphite, and are moving in good volume and are in a fairly bullish statistical position. While the tone of the market insofar as concerns bleached sulphite has eased a bit, prices of this class of pulp have not weakened, although consumers are having less trouble getting all the supply of such pulp they desire. Mills in general are reported well engaged and are sold up quite a period ahead. Some producers, it is declared, haven't any pulp to offer for months to come, their customers having loaded them up with orders which will absorb their output as far ahead as through the summer.

Unbleached sulphite is quoted firmly at 3 to 3.15 cents a pound for No. 1 strong, and in some instances a little above these figures is asked for extra quality sulphite. No. 1 book grade is quoted at 3.25 to 3.50 cents f.o.b. pulp mill. Bleached soda pulp is quoted at 3.75 to 4 cents a pound at producing plants, a majority of manufacturers naming the lower price

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but some quoting 4 cents. Bleached sulphite, depending on quality, is quoted at 4 to 4.75 cents a pound at pulp mills, while No. 1 kraft pulp is bringing 3 to 3.25 cents f.o.b. producing plants.

Production of chemical pulp in the U. S. in February totaled 101,497 net tons of all grades, compared with 105,438 tons in January, according to the American Paper and Pulp Association's report in co-operation with the United States Pulp Producers' Association. Mill stocks of chemical pulp at the end of February amounted to 20,222 tons, against 19,910 tons at the end of the preceding month.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.25-3.50
Unbleached sulphite, No. 1 strong	3.25-3.50
Unbleached sulphite, No. 1 book	3.00-3.25
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	3.00-3.25
Screenings, refined	1.60-1.80

As soon as returns are received from all establishments a report giving complete figures will be issued.

The market for pulp wood is firm, and buying recently has been fairly active, according to reports. Grinders are taking supplies regularly against contracts and are engaging in a fair amount of new buying. No changes of note have occurred in quoted prices.

Exports of pulp wood from Canada during the first three months of the current year showed a decline from the similar period a year ago, totaling 362,359 cords, valued at $3,331,998, compared with exports of 475,101 cords of a value of $4,444,876 in the first quarter of 1925.

Old Paper

The market for waste paper is in a condition bordering onto disorganization. Values have sunk to levels where dealers declare they not only cannot realize a profit in handling supplies but that they suffer an actual loss on practically every pound of old paper collected, sorted and sold to consuming mills. Demand is light, and on this factor, of course, hangs the whole present position of the market. Board mills presumably are using relatively larger amounts of wood pulp than usual and are buying less waste paper; book paper and other mills are absorbing merely routine supplies of the grades they use, and from every quarter the demand is slow and of small tonnage. Reports state that in the East packers are stopping collections, while in the West there is small doubt the production has been diminished appreciably, yet this has had no influence on the market thus far.

Mixed paper has receded in price to where sales have been made in the East at 35 cents a hundred pounds f.o.b. New York, and possibly transactions have been recorded under this level. Flat folded news is available in some sections of the country at as low as 45 cents at shipping points. However, prices on these low grades in the Chicago district are a good deal higher. Shavings are quoted by dealers at 3.50 cents a pound or around that basis for No. 1 hard white, and 2.65 cents for No. 1 soft white shavings. Old kraft has dropped to a price level of 1.75 cents per pound at shipping points for No. 1 packing, and few buyers are interested. No. 1 heavy books are quoted at 1.05 to 1.15 cents per pound, ledger stock at 1.50 to 1.75 cents, white blank news at 1.60 to 1.70 cents, and overissue news at 55 to 65 cents a hundred pounds.

The following prices, f.o.b. shipping points, are somewhat nominal:

	New York and Chicago
Hard white shavings, No. 1	3.40-3.60
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.60-2.75
Colored shavings	.90-1.00
Heavy book, No. 1	1.05-1.15
Crumpled book, No. 1	.75- .85
Ledger stock	1.50-1.75
Kraft, No. 1	1.75-1.85
Manilas, No. 1	.60- .75
White bank news	1.60-1.75
Overissue news, No. 1	.50- .65

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Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	16-40
White sulphite	12-30
Colored sulphite	11-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.80- .90
No. 2 white, 24x36	.75- .80
No. 1 manila, 24x36	.75- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.00- 5.50

Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	55.00-60.00
Plain chip	40.00-42.50
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Old Paper

(*Continued from page* 345)

Folded news	.45- .60
Sulphite mill wrappings	.70- .80
Mixed paper, No. 1	.35- .50
Common paper	.30- .40

Pulp Wood

In a report just issued, the Department of Commerce in Washington states that figures collected and compiled in co-operation with the Department of Agriculture shows that the total quantity of pulp wood consumed by 144 mills in the United States in 1925 was 3,168,843 cords, as against 3,129,780 cords consumed by the identical mills in 1924. The production of wood pulp by these mills in 1925 amounted to 2,220,559 tons, compared with 2,158,435 tons in 1924. These same plants consumed about 54 per cent of the total quantity of pulp wood used in 1924, and assuming their proportionate consumption in 1925 to have been the same—that is to say, 54 per cent of the total—an aggregate consumption of 5,840,000 cords during the latter year is indicated, an increase of slightly more than one per cent as compared with 1924. In this comparative report, which covers about 60 per cent of the total number of active mills, 22 States are represented.

Chemicals

The movement of most papermaking chemicals keeps up in good volume, and prices display steadiness. Consumers are absorbing supplies freely against contracts and also are buying currently in at least a fair way, though present new demand is somewhat limited. Bleaching powder is quoted at 2 to 2.40 cents a pound, in large drums, f.o.b. works, according to quantity. Soda ash is holding in price at 1.38 cents per pound for shipments in bags, while caustic soda ranges in price from 3.10 to 3.15 cents a pound at works, with spot quotations 3.20 to 3.25 cents.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	14.00-15.00
Casein (duty paid)	16.00-17.00
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	10.50- ....
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.32- ....
Talc (ton)	16.00-18.00

International Organization for Standardization

The basis of a general international organization for industrial standardization was laid at the Third International Conference on Standardization, recently held at New York City, by unanimous agreement upon the draft of a constitution for the new international body. At this conference, the national standardizing bodies of eighteen countries were officially represented, Hungary and Australia alone being without delegates.

The new organization is to be known as the "International Standards Association." The members are to be those central national standardizing bodies existing in the different countries, one to each country, accepting the proposed constitution.

The chief executive body is to be the "Plenary Assembly," composed of delegates from all the national bodies, final authority, however, to rest with the latter. Provision is also made for an "Administrative Council," with control of finances and administrative matters, but with advisory powers in important questions. Work on technical questions will be in the hands of "technical committees," with official representation from each country interested.

The conference recommended that the seat of the International Standards Association be in London, but this will be decided by the first Plenary Assembly.

The T. W. & C. B. Sheridan Co., 401 Broadway, New York, has been appointed eastern sales agent for the Bunn Tying Machine, which is manufactured by the B. H. Bunn Manufacturing Co., of Chicago, Ill. The Sheridan Co. will have charge of sales in the east including the greater metropolitan district and the New England States. The machine is shortly to be seen in operation at the New York office.

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Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

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Our equipment will help you to do this:

Jenssen Acid Towers
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Bullard Gas Washer
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Kamyr Feltless Wet Machine

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200 Fifth Ave., New York City

EXPORTS

Exports of paper and board from the United States during February, 1926, continued at the high level of the preceding month, according to a report of the Paper Division of the Department of Commerce based on figures compiled by the Department. Notwithstanding that there were two less business days in February than in January, export shipments, which totaled $2,083,283 in value, were only $52,000 under those during the latter month, and exceeded the corresponding month's in 1925 by $510,000, or 32 per cent. Nearly all classes of paper and board shared in this increase, the principal gains occurring in paper board, straw board, writing papers and surface coated paper. Exports of paper board and straw board, which amounted to 3,117,000 pounds, were not only larger than in February, 1925, but also were 50 per cent above the shipments in January of this year.

A noticeable feature in the February exports was the sharp decline in newsprint shipments, which fell to 2,830,000 pounds, a decrease of 43 per cent in comparison with the January shipments, and of 24 per cent in comparison with February, 1925. Exports of book paper were nearly on a level with those during January, but were slightly under those of the corresponding month last year, amounting to 1,013,089 pounds in February, 1926. Exports of wrapping paper were considerable less in February compared with the preceding month, following a sharp gain in January, the volume of shipments in February reaching only 1,709,000 pounds, a decrease of 46 per cent in comparison with the preceding month and of 13 per cent in comparison with February, 1925. Other losses occurred in shipments of cover paper, tissue and crepe paper, bristols, papeteries, and manufactures of vulcanized fibre.

IMPORTS

Wood Pulp

There is not a great deal of trade activity current in imported wood pulp excepting as concerns shipments against contracts and back orders, but the market is quite firm in tone and in a strong statistical position. Prices of bleached sulphite have eased a bit, due to circumstances outside of the paper industry, but otherwise foreign pulps hold very steady in price and selling pressure is very nearly an unknown quantity in the market. Importers are receiving limited offers from abroad, reflecting the sold-up state of producers in the Scandinavian countries and elsewhere in Europe, and therefore are not exerting much effort to effect sales to consumers here. Paper and board manufacturers, on the other hand, appear to have their requirements well covered through old purchases and are not much disposed to augment their commitments at present; consequently the market situation is a waiting one—buyers waiting until further needs develop before engaging in more purchasing, and sellers waiting for consumers to manifest greater interest before attempting to market additional supplies.

The situation abroad is firm, according to all reports. Mills in Sweden have about sold out for this year's shipment, and considerable quantities of sulphite and some kraft have been put under contract for shipment in 1927. Buyers in England and in other parts of Europe are reported anticipating their wants far ahead, and to be placing orders for shipment up until the summer of 1927. The only sign of easiness is in bleached sulphite, available supplies of this class of pulp having increased owing to demand from artificial silk or rayon manufacturers having fallen short of the expected dimensions, with the result the paper industry has been called on to absorb a larger tonnage of this pulp.

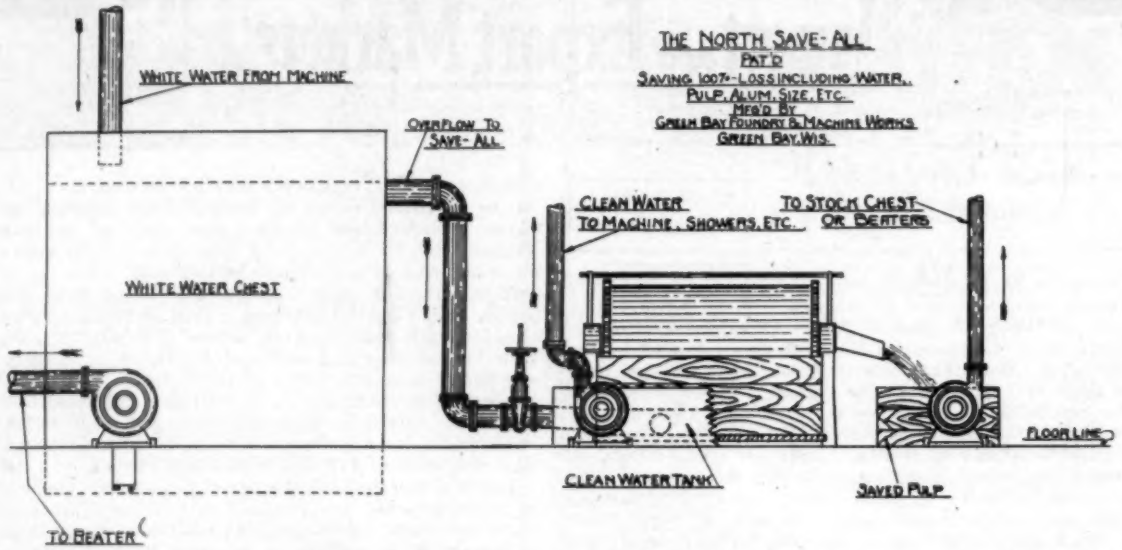
Importations of wood pulp into the United States keep on a high level. During February a total of 89,374 long tons of chemical pulps was imported, valued at $5,909,772, compared with 112,356 tons of a value of $7,074,679 in January last, and 93,990 tons of a value of $5,714,555 in February, 1925. Imports of mechanical pulp in February amounted to 20,441 long tons, valued at $588,527, contrasted with 22,668 tons imported in January last of a value of $648,654, and 24,607 tons of a value of $781,336 in February, 1925.

Prices of bleached sulphite are slightly down. Some brands of prime bleached are available at 3.75 cents per pound ex dock New York, representing a recession of about $5 per ton in prices. It is possible, it is stated, to buy some strictly prime sulphite at a shade under this level, though on the other hand 4 cents and higher are quoted on certain mill brands. Strong unbleached sulphite is firm at around 3.10 cents a pound ex dock New York, quotations ranging from 3 up to 3.25 cents, depending on quality. Standard prime Swedish kraft is quoted at 3.20 cents ex dock Now York, with a premium of a dollar or two per ton asked for spot lots in this country, while quotations on kraft for shipment next year are about 3.10 cents on the dock at New York or other American Atlantic ports. Easy bleaching sulphite is quoted at around 3.40 cents ex dock, and ordinary Mitscherlich unbleached sulphite at around 3.05 cents. Prime dry ground wood is quoted from $40 to $44 a ton ex dock New York.

Current market quotations ex dock New York and receipts at the port of New York during April follow:

Bleached sulphite, No. 1	3.75- 4.25
Unbleached sulphite, strong, No. 1	3.00- 3.25
Unbleached sulphite, No. 2	2.85- 3.10
Easy bleaching sulphite	3.25- 3.50
Mitscherlich unbleached, genuine	3.50- 3.75
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	3.10- 3.30
Ground wood, per ton (dry)	40.00-44.00

Equitable Trust Co., 148 bls. from Antwerp and 136 bls. Hamburg; Nilsen, Lyon & Co., 1,216 bls. from Bremen and 311 bls. Hamburg; North German Lloyd, 3 bls. from Bremen; Tidewater Paper Mills Co., 11,918 bls. ground wood from Liverpool, N. S.; Lagerloef Trading Co., 337 bls. from Hamburg and 557 bls. Hango; Atterbury Bros., 135 bls. from Rotterdam; W. Hartmann & Co., 2,795 bls. from Hamburg; H. Hollesen, Inc., 503 bls. from Hamburg; Bulkley, Dunton & Co., 1,040 bls. from Bremen, 1,132 bls. from Rotterdam and 500 bls. from Gothenburg; Central Union Trust Co., 136 bls. from Hamburg and 400 bls. Oslo; J. Andersen & Co., 275 bls. from Hamburg, 5,000 bls. Gothenburg and 3,072 bls. Hafslund; Chase National Bank, 1,600 bls. from Bremen and 1,200 bls. Oslo; Philadelphia National Bank, 600 bls. from Oslo; A. P. W. Paper Co., 1,300 tons from Sheet Harbor, N. S.; Castle & Overton, 140 bls. from Rotterdam; M. Gottesman & Co., 4,520 bls. from Sebenico and 1,300 bls. Rotterdam; Johaneson, Wales & Sparre, 625 bls. from Hamburg and 963 bls. Gothenburg; Chemical National Bank, 1,500 bls. from Hafslund and 900 bls. Haplund; Waterfalls Paper Mills, 6,618 bls. from Hafslund; Scandinavian Pulp Agency, 1,524 bls. from Gothenburg; E. M. Sergeant Co., 2,545 bls. from Gothenburg and 475 bls. Oslo; Price & Pierce, 3,000 bls. from Gothenburg; Pagel, Horton & Co., 6,000 bls. from Stockholm; B. L. Soberski, 1,200 bls. from Oslo; Buck, Kaier & Co., 1,556 bls. from Oslo; Order, 1,292 bls. from Antwerp, 4,426 bls. Hamburg, 1,880 bls. Bremen, 2,940 bls. Trieste, 3,751 bls. Hango, 125 bls. Haplund and 400 bls. Oslo.



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The above layout on a ten-ton machine shows a profit of $103 per day with no pollution of streams and an efficiency of 98% in returned pulp. All of the eight paper machines in this mill are thus equipped. Alum cut down one third. Name of mill on application.

We Sell Water Filters, Valves, Pumps, Stone Plates, Thickeners

See Page 349 in the 1925 Paper and Pulp Mill Catalogue

GREEN BAY FOUNDRY AND MACHINE WORKS, Green Bay, Wis.

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LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

Eighteen reasons why you should use "Michigan" combination steel and wood pipe

1—Durability of Wood Shell. 2—Sanitary. 3—20% more capacity than Cast Iron Pipe. 4—Simplicity in handling. 5—Light in weight. 6—Speed in laying. 7—Protects against freezing. 8—Not affected by Electrolysis. 9—Rigid inspection of materials. 10—Efficient construction of stave. 11—Strength of steel banding. 12—Protection of banding with asphalt coating. 13—Cannot burst under pressure. 14—Can be laid in a wet trench. 15—Short curves without specials. 16—Low installation and maintenance cost. 17—Responsibility of company. 18—Not affected by sulphur or chemical solutions.

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"Steel for Strength—Wood for Durability"

Paper Stock

Imports of papermaking materials other than wood pulp into the United States continue on a large scale although some little falling off has been noted during the last couple of months. Rags are coming into the country in surprisingly large quantities in view of the prevailing market condition, and receipts of old rope, bagging and miscellaneous stock were large in April, judging from arrivals at the port of New York during that month.

Imports of all kinds of papermaking material through the port of New York in April, with names of consignees, compiled from manifests of steamers reaching that part during the month, were as follows:

Old Rope

Nat E. Berzen, 137 bls.; Brown Bros. & Co., 840 bls. and 1,314 coils; F. & R. Trading Co., 130 bls.; Ellerman's Wilson Line, 392 coils; National City Bank, 148 pkgs.; H. J. Reed, 38 bls.; Marx Maier Paper Mill Supply Corp., 37 bls.; Irving Bank-Columbia Trust Co., 101 bls.; United Fruit Co., 12 bls.; Stone Bros. Co., 230 coils; Michael Flynn, 5 bls.; International Purchasing Co., 377 bls.; Jaffe Products Co., 36 bls.; Order, 431 coils and 113 bls.

Old Bagging

A. W. Fenton, Inc., 219 bls.; Anglo-South American Trust Co., 67 bls.; Irving Bank-Columbia Trust Co., 112 bls.; Brown Bros. & Co., 38 bls.; Mechanics & Metals National Bank, 173 bls.; Grace National Bank, 41 bls.; Central National Bank, 119 bls.; Marx Maier Paper Mill Supply Corp., 339 bls.; Stone Bros. Co., 212 bls.; D. I. Murphy, Inc., 222 bls.; Robert Blank, 241 bls.; J. J. Patricof, 208 bls.; Atterbury & McKelvey, 96 bls.; Weil Bros., 46 bls.; Strupp & Co., 46 bls.; State Bank, 2,141 bls.; Acme Burlap Bag Co., 108 bls.; Castle & Overton, 132 bls.; Royal Mfg. Co., 27 bls.; Salomon Bros. & Co., 139 bls.; E. J. Keller Co., 796 bls.; New York Trust Co., 105 bls.; Jaffe Products Co., 7 bls.; Daniel M. Hicks, Inc., 50 bls.; L. H. Abenheimer, 111 bls.; Manufacturers Trust Co., 400 bls.; Order, 478 bls.

Rags

Sterling Mill Supply Co., 102 bls.; D. I. Murphy, Inc., 103 bls.; Salomon Bros. & Co., 839 bls.; Darmstadt, Scott & Courtney, 282 bls.; S. Kraszniker, 42 bls.; L. Tritsch, 299 bls.; J. J. Patricof, 86 bls.; S. Birkenstein & Sons, 244 bls.; Castle & Overton, 517 bls.; J. A. Medina, 56 bls.; M. Kararek, 47 bls.; Stone Bros. Co., 269 bls.; George M. Graves Co., 358 bls.; L. H. Abenheimer, 182 bls.; Robert Blank, 255 bls.; American Wool Stock Co., 81 bls.; Atlas Waste Material Co., 132 bls.; Daniel M. Hicks, Inc., 174 bls.; Victor Galaup, Inc., 452 bls.; Leshner Paper Stock Co., 72 bls.; Paul Berlowitz, 94 bls.; Royal Mfg. Co., 10 bls.; E. Meyer, 10 bls.; Atterbury & McKelvey, 196 bls.; E. J. Keller Co., 3,655 bls.; Barrett Co., 615 bls.; Milton Snedeker Corp., 39 bls.; George W. Miller & Co., 39 bls.; United American Lines, 543 bls.; Baring Bros. & Co., 114 bls.; Marx Maier Paper Mill Supply Corp., 185 bls.; Seaboard National Bank, 284 bls.; S. Kursnicker, 45 bls.; R. Godfrey, 51 bls.; Atterbury Bros., 52 bls.; J. M. Jaffe, 17 bls.; William Steck & Co., 52 bls.; Bowery & East River National Bank, 884 bls.; National City Bank, 102 bls.; National Bank of Commerce, 1,242 bls.; Equitable Trust Co., 274 bls.; State Bank, 198 bls.; Anglo-South American Trust Co., 624 bls.; Paterson National Bank, 53 bls.; Mechanics & Metals National Bank, 2,676 bls.; Alexander H. Searle, Inc., 374 bls.; Grace National Bank, 22 bls.; Irving Bank-Columbia Trust Co., 248 bls.; Central National Bank, 201 bls.; Kidder Peabody Acceptance Corp., 117 bls.; Philadelphia National Bank, 107 bls.; Union National Bank of Philadelphia, 32 bls.; Chemical National Bank, 264 bls.; Bank of New York & Trust Co., 256 bls.; American Exchange-Pacific National Bank, 24 bls.; A. E. Fenton, Inc., 2,956 bls.; Brown Bros. & Co., 476 bls.; Goldman, Sachs & Co., 80 bls.; Strupp & Co., 290 bls.; R. F. Downing & Co., 48 bls.; C. R. Spence & Co., 37 bls.; Amsinck, Sonne & Co., 284 bls.; Order, 2,051 bls.

Miscellaneous Paper Stock

Whaling Waste Products Co., 20 bls.; J. H. Faunce, 123 bls.; Anglo-South American Trust Co., 180 bls.; Irving Bank-Columbia Trust Co., 322 bls.; Central National Bank, 38 bls.;

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
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Starch

A Clean, Uniform Rosin

IF YOU have not yet investigated the effectiveness and suitability of Hercules Wood Rosin for your paper size, you may find it profitable to try this clean, dependable product.

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BRANDON 3-PLY "TRI-UMPH" AND STANDARD WARP

Deckle Tape and Cutter Webbing—Cotton and Rubber Belting—Enamelled, or Rubber, Fourdrinier Aprons—Rubber Splicing Tissue—Neutral Soap Powder—Dryer Felt Sewing Twine —Superheat Asbestos Packing—Rubber Sheet Packing—Steam and Water Hose "Lambeth" Cotton Transmission Rope

Technical Association Papers, Series VIII (1925)

In paper, 248 pages. $3 per copy

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- Chemistry in the Soda Pulp Process
- Economy of Lime Reburning
- Evaporator Test Code for Soda Mills
- Preliminary Impregnation of Wood
- Strength Test for Chemical Pulp
- Sulphite Waste Liquor as Fuel
- Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
- Alexander Electric Paper Drier
- Burning of Wood Refuse
- Moisture Meter and Its Use in Water Removal
- Ruths' Steam Accumulator
- Steam Prime Movers for Paper Mills
- Ventilation of Paper Machine Rooms

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- Norton's Segmental Pulpstone
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- Bureau of Standards and the Weller Brittleness Test
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- Test for the Liquid Permeability of Paper
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WASTE
- Burning of Wood Refuse
- Economy of Lime Reburning
- Uses of Carbon Recovered from Black Ash
- White Water and Stream Pollution
- White Water Utilization Code

MISCELLANEOUS
- Baryta Paper
- Bibliography of Paper Making for 1924
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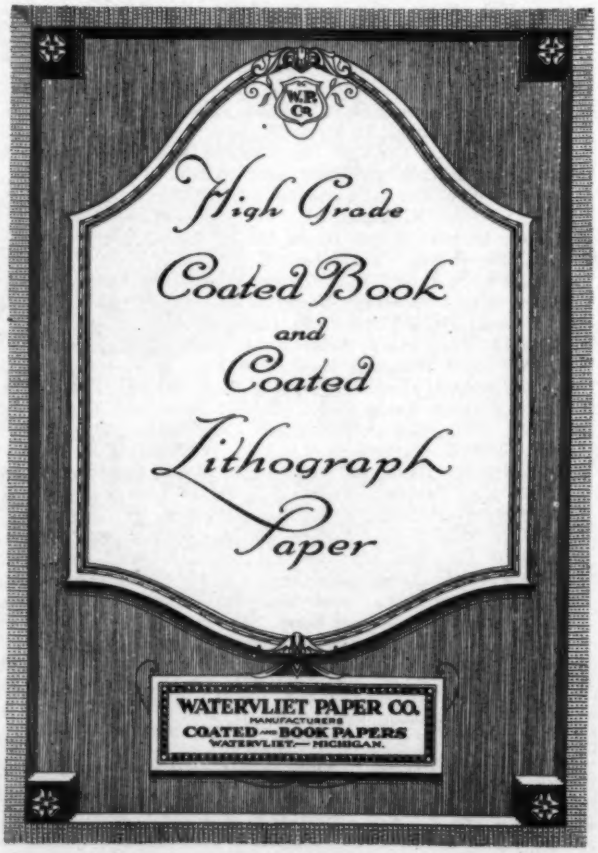

Salomon Bros. & Co., 109 bls.; National City Bank, 112 bls.; National Savings & Trust Co. of Cleveland, 86 bls.; J. Cohen & Son Co., 18 bls.; Cohen & Co., 24 bls.; Standard Products Corp., 42 bls.; E. J. Keller Co., 299 Bls.; Order, 694 bls.

Paper

Imports of paper and board into the United States in February, 1926, were valued at $10,430,685, an increase of 6 per cent over January last, and of 14 per cent over February, 1925, according to Department of Commerce statistics. Imports of standard newsprint, which form the bulk of these receipts, increased from 221,884,000 pounds to 266,438,000 Co., 4 cs. from Antwerp; Baer Bros., 15 bls. from Hamburg; ing newsprint, imports of paper and board into the U. S. during February were $215,449 greater than during the corresponding month last year.

Imports of paper during April, 1926, continued on a fairly high level, judging from unofficial figures compiled from manifests of steamers reaching the port of New York in that month. Some sizeable shipments of wrapping paper were received, and usual amounts of cigarette, hanging, filter and other classes were imported. Arrivals of printing papers fell off.

Paper imports of all kinds through the port of New York during April follow, these data being taken from manifests of vessels arriving at that port during the month:

Printing

Oxford University Press, 18 cs. from Liverpool; P. C. Zuhlke, 97 cs. from Antwerp and 49 cs. from Rotterdam; Totan Shipping Co., 12 cs. from Southampton and 16 cs. from Havre; H. Glass & Co., 4 cs. from Antwerp; B. F. Drakenfeld & Co., 90 cs. from Liverpool; Keuffel & Esser Co., 97 cs. and 201 rolls from Hamburg; W. Hartman & Co., 413 bls. from Hamburg; H. Reeve Angel & Co., 648 cs. and 591 rolls and 120 bls. from Hamburg; J. P. Heffernan Paper Co., 52 bls. from Hamburg; E. Dietzgen & Co., 40 cs. from Rotterdam; C. Steiner, 159 cs. from Rotterdam; Maurice O'Meara Co., 29 bls. from Hamburg; Hudson Trading Co., 41 rolls from Stockholm; Order, 547 reels and 42 cs. from Bremen, 231 rolls and 29 bls. from Hamburg, 805 reels and 464 cs. from Hango, and 49 cs. from Glasgow.

Wrapping

F. C. Strype, 56 bls. from Antwerp; Birn & Wachenheim, 5 cs. from Antwerp; A. C. Dodman, Jr., Inc., 6 cs. from Southampton; Maurice O'Meara Co., 45 bls. from Hamburg and 12 rolls and 31 bls. from Gothenburg; E. L. Garvin & Co., 4 cs. from Antwerp; Baer Bros., 15 bls. from Hamburg; Okonite Collendar Cable Co., 234 reels from London; P. H. Petry & Co., 113 webs from Glasgow; International Forwarding Co., 51 cs. from Hamburg; Burroughs, Welcome & Co., 8 cs. from London; Steffens, Jones & Co., 11 cs. from Rotterdam; W. Hartmann & Co., 30 rolls from Hamburg; J. E. Bernard & Co., 34 cs. from Hamburg and 5 cs. from Gothenburg; Southern Pacific Lines, 7 bls. from Rotterdam; Wilkinson Bros. & Co., 6 cs. from Rotterdam; Foreign Paper Mills, Inc., 87 rolls and 83 bls. from Gothenburg; Arkell Safety Bag Co., 212 rolls and 37 bls. from Gothenburg; Thomas Barrett & Son, 242 bls. and 22 rolls from Gothenburg; C. K. MacAlpine & Co., 133 rolls and 20 bls. from Gothenburg; C. Steiner, 15 cs. from Hamburg; Borregaard Co., 1,223 reels and 248 bls. from Gothenburg; Coy, Disbrow & Co., 21 bls. from Gothenburg; Order, 65 cs. from Hamburg.

Cigarette

American Tobacco Co., 1,100 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 2,940 cs. from St. Nazaire; De Manduit Paper Corp., 693 cs. from St. Nazaire; Standard Products Corp., 336 cs. from Havre; P. J. Schweitzer, 50 cs. from Havre and 100 cs. from Marseilles; Bank of the Manhattan Co., 30 cs. from Lisbon; Surbrug Co., 18 cs. from Havre.

Writing

Globe Shipping Co., 6 cs. from Havre; Coenca-Morrison Co., 13 cs. from Havre; P. Puttmann, 70 cs. from Antwerp; Guibont Freres & Co., 43 cs. from Southampton and 33 cs. from Havre; J. W. Hampton, Jr., & Co., 7 cs. from Hamburg; Wes-

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Cut down *excessive* wrapping paper investment. Why carry two wrapping paper lines for one wrapping paper *purpose?*

MOSINEE

presents a perfect wrapping paper, weight and strength for each wrapping purpose. Made in all weights from 15 pounds to 100 pounds basis. The one complete, standardized and economical line of wrapping paper sold.

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"The Wrapper that Delivers the Goods"

MITTS & MERRILL SHEET STOCK SHREDDER

Giving the Beater a Lift

The operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Any thing that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The MITTS & MERRILL SHEET & LAP STOCK SHREDDER performs on magazines, books, old paper and boxboard, frozen or dried pulp laps in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 378 and 379 in the Paper and Pulp Mill Catalogue

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Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

sel, Duvall & Co., 22 cs. from London; Distinctive Writing Paper Co., 3 cs. from Havre; Order, 8 cs. from Antwerp.

Drawing

H. Reeve Angel & Co., 10 cs. from London; E. Dietzgen & Co., 13 cs. from Hamburg and 5 cs. from London; Kauffel & Esser Co., 120 cs. from Hamburg and 16 cs. from Southampton; Devoe & Raynolds Co., 4 cs. from London; Globe Shipping Co., 17 cs. from Bremen; Order, 17 cs. from Hamburg.

Filter

A. Giese & Son, 39 bls. from Bordeaux and 15 pkgs. from Hamburg; E. Fougera & Co., 46 cs. from Bordeaux; C. G. Euler, 25 bls. from Bordeaux; J. Manheimer, 138 bls. from Southampton; H. Reeve Angel & Co., 39 bls. from Southampton and 44 cs. from London; C. Sleicher & Schull Co., 5 cs. from Hamburg; Order, 20 bls. from Bordeaux.

Tissue

Iwai & Co., 9 cs. from Kobe; Baldwin Universal Co., 15 cs. from Liverpool; F. C. Strype, 44 cs. from Liverpool; S. Gilbert, 4 cs. from Rotterdam.

Photo

J. J. Gavin & Co., 6 cs. from Liverpool; Gevaert Co. of America, 217 cs. from Antwerp and 34 cs. from Rotterdam; P. C. Zuhlke, 295 cs. from Antwerp and 32 cs. from Rotterdam; Defender Photo Supply Co., 3 cs. from Antwerp; Globe Shipping Co., 9 cs. from Bremen; P. Puttmann, 108 cs. from Antwerp; Order, 52 cs. from Antwerp and 16 cs. from Hamburg.

Hanging

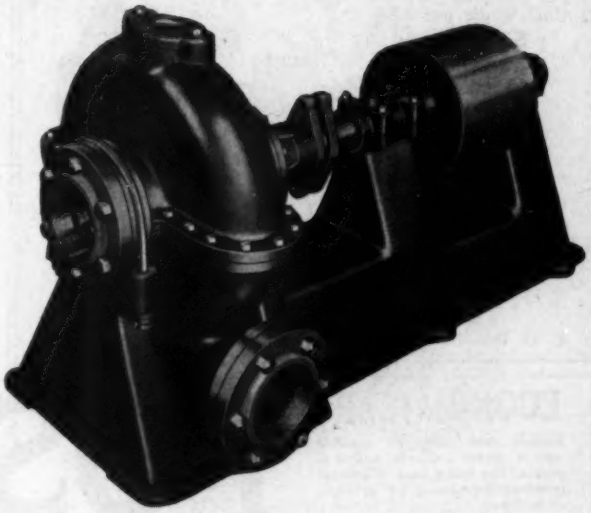
W. H. S. Lloyd & Co., 6 bls. from Liverpool; A. C. Dodman, Jr., Inc., 49 bls. from Liverpool, 16 cs. from Southampton and 3 cs. from Havre; F. J. Emmerich & Co., 3 bls. from Havre, 42 bls. from Liverpool, 61 bls. from Hamburg and 40 bls. from London; Panama-Pacific Line, 18 bls. from London; C. A. Haynes & Co., 146 bls. from London; F. & R. Trading Co., 387 rolls from Bremen and 160 bls. from Rotterdam; G. J. Hunken & Co., Inc., 3 bls. from Hamburg; R. F. Downing & Co., 13 bls. from London; Order, 154 reels from Hango and 7 cs. from London.

Board

W. J. Byrnes & Co., 11 pkgs. from Liverpool; K. Hagenlacher, 64 cs. from Hamburg; R. Reiner, 9 cs. from Bremen; Metropolitan Import & Mfg. Co., 75 cs. from Hamburg; First National Bank of Brooklyn, 307 reels from Rotterdam; Adrian Vuyck, 2,048 rolls from Rotterdam; A. Leunis, 12 cs. from Hamburg; Davies, Turner & Co., 3 cs. from London; National Paper & Type Co., 16 bls. from Trieste; Wilkinson Bros. & Co., 10 rolls from Gothenburg; Fibre Case & Novelty Co., 31 bls. from Gothenburg; Order, 1,200 bls. from Hamburg.

Miscellaneous

Charles W. Williams & Co., 18 cs. from Antwerp; H. D. Catty Co., 4 cs. from Antwerp and 15 cs. from Bremen; Japan Paper Co., 62 cs. from Havre, 36 cs. from Genoa, 5 cs. from Rotterdam and 26 bls. from Rotterdam; Coenca-Morrison Co., 17 cs. from Havre; Franklin Simon & Co., 4 cs. from Havre; Perry, Ryer & Co., 271 cs. from Glasgow; Whiting-Patterson Co., 7 cs. from Southampton and 16 cs. from Hamburg; H. Reeve Angel & Co., 3 cs. from London and 4 cs. from Yokohama; F. C. Strype, 196 cs. from Hamburg; J. J. Shors, 9 cs. from Bremen; Judson Freight Forwarding Co., 5 cs. from Bremen; Old Master Paper and Pulp Corp., 12 cs. from Hamburg; Irving Bank-Columbia Trust Co., 9 cs. from Hamburg; G. Gennert, 35 cs. from Havre; P. H. Petry & Co., 8 cs. from Rotterdam and 27 cs. from Hamburg; International Forwarding Co., 6 cs. from Rotterdam, 15 cs. from Hamburg and 23 cs. from Antwerp; Chemical National Bank, 52 cs. from Glasgow; F. B. Vandegrift & Co., 4 cs. from Havre; R. F. Downing & Co., 49 pkgs. from Havre; G. W. Sheldon & Co., 3 cs. from Southampton; A. J. Bracher & Co., 10 cs. from Havre; C. H. Boulin, 37 cs. from Havre; Heemsoth, Basse & Co., 119 pkgs. from Rotterdam.



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Our pump has many advantages over the ordinary HALF STUFF PUMP. It is designed for use on long, coarse stock; has large openings (ranging from 3″ to 10″ in diameter); does not clog; will throw out anything that will go through the pipes; will deliver stock at any angle.

Our pumps are in use transferring half stuff from one chest to another and feeding Claflin refiners, jordans and wet machines.

Built in bronze, cast iron and lead.

Write for Prices and Specifications

See pages 350-351 in the 1925 Paper and Pulp Mill Catalogue

Hermann Manufacturing Co.

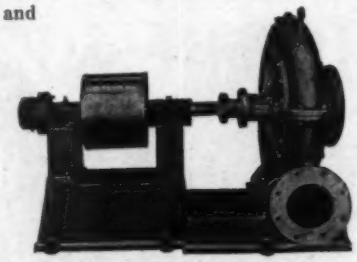
(Mfrs. of Claflin Refiner)

LANCASTER OHIO

For pumping pulp and thick stock our

Single Suction Open Impeller Split Casing Pumps

are most convenient and advantageous.



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Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

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Reduce fuel costs by making use of waste exhaust gases to preheat the boiler feed. Patented construction proven by 20 years of service.

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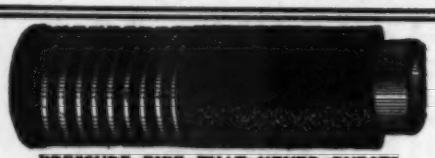

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Built in sizes 1 inch to 48 inches

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The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

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The 100% LUBRICANT

NEVER DRIPS

Being a thorough lubricant, Albany Grease keeps the bearings cool, prevents overheating and scoring even when sudden and unusually heavy loads are put on the bearings. Try as you will, you cannot find another grease to take its place. Sold in cans and barrels—all consistencies.

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Major Porter Examining European Forest Conditions

In the furtherance of the policy of the American Paper and Pulp Association to maintain friendly contact with manufacturers of pulp and paper in Europe, and to keep itself accurately informed of developments in the manufacture of pulp and paper abroad and as to forest conditions, Major O. M. Porter, assistant secretary of the association, sailed April 21st for two months in Europe.

Major Porter's first stop was made in Rome, where he represented the association at the International Forestry Congress held there during the first week in May. From Rome, Major Porter is turning back into France to visit some of the forests producing pulp wood and some of the paper plants. Incidentally, he will go over again some of the woods' operations of which he had charge during the war as a captain of engineers.

From France, Major Porter will go up through western Germany, stopping at Aschaffenburg to visit mills in the vicinity of Aschaffenburg and Frankfort, and then, after a brief visit to the Black Forest, he will go on to Berlin, and from Berlin as his center will visit a number of typical forests in northern Germany and some of the pulp and paper mills and machinery plants.

About May 30, Major Porter will reach Oslo in Norway, stopping en route at several pulp and paper mills and machinery manufacturing centers in western Sweden. From Oslo, Major Porter will go to Trondhjem, thence turning eastward across Sweden to the pulp and paper mills north of Stockholm. From Stockholm, Major Porter will then go to Finland, again visiting pulp and paper mills and seeing something of forest conditions. The return trip will be made on the new Swedish-American steamer, the Gripsholm.

One of the most interesting and significant features of Major Porter's trip abroad is the large number of requests which have come to the association from members of the American Paper and Pulp Association and from various affiliated associations, and from members of the Supply and Equipment Association.

Upon assembling these requests, which cover the entire field of the pulp and paper industry from the forest to the market, the association found that if Major Porter is to get information upon one-third of the requests, it will require his presence in Europe for at least six months instead of two months. The diversity of requests indicates the keen interest of the industry in conditions abroad, and emphasizes the desirability of the American Paper and Pulp Association having a representative visit various pulp and paper sections of Europe regularly.

Soon after his return to the United States late in June, Major Porter is planning to get out a series of reports covering the sections which he visited and the inquiries from the different associations, and these will be sent to members of the association and to members of the Supply and Equipment Association. After the industry has been circularized with these separate reports, it is probable that they will be printed in pamphlet form.

U. S. Chamber of Commerce to Hold Meeting

A large delegation of business men representing the paperboard and lumber-box industries, is expected to attend the Fourteenth Annual Meeting of the United States Chamber of Commerce, to be held at Washington, May 11 to 13.

The preliminary program shows that the questions to be considered are of importance to all branches of industry, finance, and commerce. The major subject, around which all the discussions of the meeting will center, will be "Self-regulation in Business." Prominently featured on the program are two additional subjects, namely, "Local and State Taxation and Budgeting," and "Relations of the States to the Federal Government."

High government and state officials and business men of national prominence will take part in the discussions.

The Eighth Annual Convention of the National Lime Association will be held at French Lick Springs, Ind., from June 8-11.

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Type "B"

Flexible Coupling

The Universal Giant Type "B" Flexible Coupling embodies all the advantages of an ideal coupling. Built along lines of correct engineering principles, with the usual Wood's quality material and workmanship, we have here a flexible coupling that is a product of 69 years' experience in the manufacture of power transmission appliance.

Type "B" or disc couplings consist of two cast-iron flanges with lugs cast integral. The intermediate driving member is a leather disc, made from selected stock, with plies cemented and stitched together, which provides flexibility in every direction and acts as an insulator.

This coupling is strong and durable. Its performance is especially fine when directly connecting motors to machines. Flanges and hubs are finished to insure true running.

While primarily intended for high-speed service, they work equally well at low speeds. Your local dealer will be glad to show you the advantages of this and other Universal Giant Power Transmission Appliances. If he sells the Universal Giant Line, he is a good man to know.

Literature on Request

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Cast Iron Hangers and Pulleys, Flexible Couplings, Friction Clutches, U. G. Short Center Contactors—a complete line of Power Transmission Appliances.

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for finishing all kinds of Paper and Cardboard

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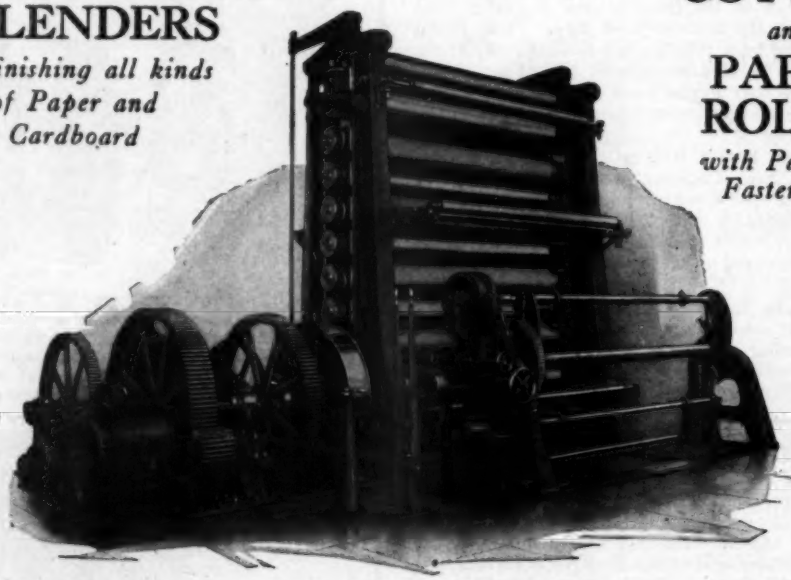

Rag Cutters,
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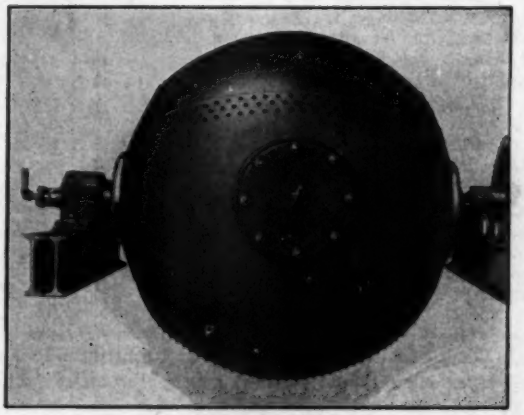
Biggs New Improved Bleaching Engine

RECOGNITION of the importance of the final steps in the manipulation of pulp for paper making led to the development of the Biggs Improved Patented Bleaching Engine.

In this new Rotary Bleaching Engine high-density cold-bleaching under pressure is carried on under conditions that insure a white, strong pulp with quality of fibre at its best.

Get full information on this new equipment which offers maximum economies in time, power and bleaching materials.



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